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BRAMLETTE

CONVICT CANYON AREA: A WILDERNESS RECREATION CAPACITY STUDY

by

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District Recreation Officer
Mammoth Lakes Ranger District
Inyo National Forest

February, 1985

USDA, Forest Service
and
Department of Recreation and Park Administration
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ABSTRACT

Past recreational use in wilderness has often degraded the natural environment and recreation experience opportunities. On the Mammoth Lakes District of the Inyo National Forest, 13 of 15 wilderness trailheads currently have daily entry quotas on overnight use.

The Convict Canyon Area is the remaining drainage where overnight use is not rationed. Problems characteristic of overused and crowded wilderness are evident, but have not yet reached the critical stage. This study was conducted in an effort to avoid "unacceptable changes" in Convict Canyon.

To facilitate making thoughtful management decisions regarding wilderness use in Convict Canyon, a thorough analysis of current use and management was made. Visitors and the campsites were examined. Visitor permit data provided an accurate profile of the users and, use characteristics and a basis for estimating the number of party encounters per day. Responses from 89 visitors to a letter from the District Ranger provided a source of judgement about existing use levels, impacts, crowding and management issues. A campsite inventory was also conducted to estimate the amount and capabilities of campsites found in the area. A carrying capacity, allocated between the various user groups, is recommended for the Convict Canyon Area. Other specific management actions with implementation guidelines are suggested.

SUMMARY

The development of a "capacity" for protecting the wilderness resource and recreation experiences of visitors to the Convict Canyon Area was the primary purpose of this analysis.

Visitor and campsite data were collected to accomplish the following study objectives: (1) evaluate the impact of day users, (2) estimate the physical capability for overnight camping, (3) estimate the number of encounters for overnight parties, (4) obtain feedback from users on factors affecting their trip satisfaction, (5) recommend a maximum capacity, and, (6) recommend appropriate allocation and implementation guidelines for capacity management. The visitor permit, the District Ranger's letter asking for comments and the campsite inventory were tools used to collect data in this study.

Ninty-three percent of the users entered the area through Convict Canyon. The split between the number of day and overnight users was 710 and 573, respectively. However, overnight users accounted for 86 percent of the visitor-day usage. Commercially guided stock parties represented only 7 percent of the total visits.

The average overnight visitor spent 3.5 nights per trip and travelled with 2.7 other people.

Day visitors were discounted as a critical factor affecting crowding, as they spread their use quite evenly over the season and rarely penetrated far into the wilderness. On the other hand, overnight use peaked during August and early September, with more than three and one-half times the use found in May, June or July. Over the Labor Day weekend, 34 overnight parties, or more than 100 people, visited the area. That day, the average camped party probably encountered 7 other parties, while the average travelling party encountered 14. By wilderness standards, that is a high level of party encounters.

Nearly ninety visitors to the Convict Canyon Area responded to the District Ranger's letter. About one out of three visitors stated they encountered "crowded" conditions during at least part of their trip. Evidence of overuse was identified by two out of three respondents. However, most respondents reported great success with "achievement of their trip expectations". A disproportionate number of complaints about the lack of solitude, crowds, or resource impacts were from visitors using the area during peak-use days.

While many sign, trail or bridge improvements were requested, one out of five respondents strongly argued against improvements -- stating improvements were inappropriate in the wilderness. The greatest degree of controversy centered around replacement of the Convict Creek bridge.

Most respondents supported either the present management or stressed the need for further regulations to protect the wilderness experience and resource.

Sixty-five campsites were inventoried within the study area, however, only 28 passed a spacing criteria test that screened for "poor" and "too many" campsites. Applying this study's visitor and campsite data to the John Muir Wilderness Managment Plan's entry quota formula produced a daily trailhead quota of 22 people.

Several capacity actions are suggested for the Convict Canyon Area: (1) Limit the Persons-At-One-Time (PAOT) capacity to 55; (2) allocate 15 PAOT to the commerical outfitter, 10 PAOT to day users and 45 PAOT to overnight users; and (3) manage overnight use at or below capacity.

To manage use at capacity, the following recommendations should be implemented: (1) Monitor effects of replacing the Convict Creek bridge; (2) do not replace the Convict Creek bridge if it ever fails; (3) reassign the commercial outfitting from the Convict Lake Resort to the Mammoth Lakes

Equestrian Center, if the opportunity arises; (4) do not construct new trails; (5) downgrade the level of trail maintenance on the Convict Trail if commerical stock use is relocated over the Laurel Trail; (6) conduct a comprehensive communications analysis to identify opportunities to better educate wilderness users (trailhead display, campfire programs, specific wilderness literature, etc.); (7) use a sample of photo-plots to monitor impact trends; (8) encourage "off-season" use; (9) restrict campfires around lakes where necessary; and (10) limit maximum group size to 15.

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I. INTRODUCTION

A. The Place of Wilderness Management

"The hopes of Thoreau and Marshall and Leopold seemed fulfilled, confirming Muir's forecast, 'thousands of tired, nerve-shaken, over-civilized people had come to the wilderness and discovered that wilderness is a necessity'. Indeed two million had - every season. Wilderness recreation had never been so popular, and a strong base of political support for wilderness preservation seemed assured. But even as preservationists were celebrating their apparent victory, the more perceptive among them saw a disturbing new threat to wilderness in their own enthusiasm. Ironically, the very increase in appreciation of wilderness threatened to prove its undoing. Having made extraordinary gains in the public's estimation in the last century, wilderness could well be loved out of existence in the next" (Nash, 1973).

Nash's concern about recreational overuse and misuse of wilderness areas has been shared for some time by users, researchers and managers alike. Actions taken to allocate wilderness are not enough. Equally important is thoughtful wilderness management to accomplish the purposes set forth in the 1964 Wilderness Act.

To some people, the idea of managing wilderness seems to be a paradox (Lucas, 1973). How can it be wilderness if it's managed? However, wilderness management is exactly what Nash and others have been calling for to keep wilderness areas wild.

For the most part, wilderness management is people management (Hendee et al., 1978). Wilderness environments do not need to be managed, in fact, it would be unlawful to do so; it is people, and their impacts on the environment, that must be managed. Wilderness management primarily

involves working to preserve the natural integrity of wilderness environments. Hendee et al. (1978) emphasizes that "Wilderness management should not mold nature to suit people. Rather, it should manage human use and influences so that natural processes are not altered. Managers should do only what is necessary to meet wilderness objectives, and use only the minimum tools, force, and regulations required to achieve those objectives".

B. Impacts of Wilderness Recreation

Wilderness use of the eastern Sierra is concentrated both in time and space. About 90 percent of all use occurs between June and September and is centered around lakes, along streams and on trails. This concentrated use has greatly impaired wilderness quality. Trails have deepened and widened, causing vegetation losses, soil erosion and visual scars. Popular lakes are surrounded by campsites denuded of understory vegetation and supporting dying trees and compacted soils. These campsites are readily identifiable by the presence of rock "fire-rings", charcoal and ashes from campfires, blackening of rocks, lack of dead wood, trails to water, wind shelters, litter, etc. In many locations, body waste disposal is a serious problem around heavily used campsites and the spread of "giardiasis" from contaminated backcountry water has reached alarming levels. Similar biophysical impacts resulting from recreation have been reported in the literature (ORRRC, 1962; Frissell and Stankey, 1965; Snyder, 1965; Barton, 1969; Arno, 1971; Taylor, 1972; Hartesvelt et al., 1971; Lime, 1972; Lucas, 1974; Helgath, 1975; Temple and Sanks, 1981). While many of these man-caused changes are judged to be short-term ecological impacts, they are significant in terms of their effects on the satisfaction of many visitors seeking a "wilderness experience". Studies have suggested that the change or effect on the visitor's experience may be the most sensitive indicator of recreational impact (Stankey,

1974me, 1975; Badger, 1975). Habermehl (1973) found th percent of the respondents in a study in the Mis Wilderness felt that there were more wilderness usnan desired. Stankey (1971) reported that crowding wained by visitors in relation to beat-up campsites, li inability to locate isolated campsites and cts with other groups, in addition to excessive nt of other visitors.

C. Wess Management History on the Inyo

D (1982) stated in his summary of the evolution of c management on the Inyo National Forest (Inyo) th Regional Forest Order, a permit was required for wiss entry in California beginning in 1971. This psystem developed into the principal tool for visitor c collection of use data, and allocating use.

B agencies, including the Inyo, began limiting use oited trailheads feeding areas judged to be seriously o. Prior to 1980, the Inyo added entry quotas to thrity of its wilderness trailheads during the heavy usn. Currently, 13 of 15 trailheads on the Mammoth Lager District have daily entry quotas on overnight us

In on to the mandatory visitor permit and trailhead enta actions, the Inyo has made extensive use of thwing wilderness management tools: information/ ed materials, fire and camping restrictions (on a case basis), wilderness use practices and reas and wilderness rangers.

D. Conyon: The Study Area

Thet Canyon Area occupies the northeast corner of their Wilderness, Inyo National Forest, California (fi. This drainage remains as one of the few on the Inyo overnight use is not rationed. Problems

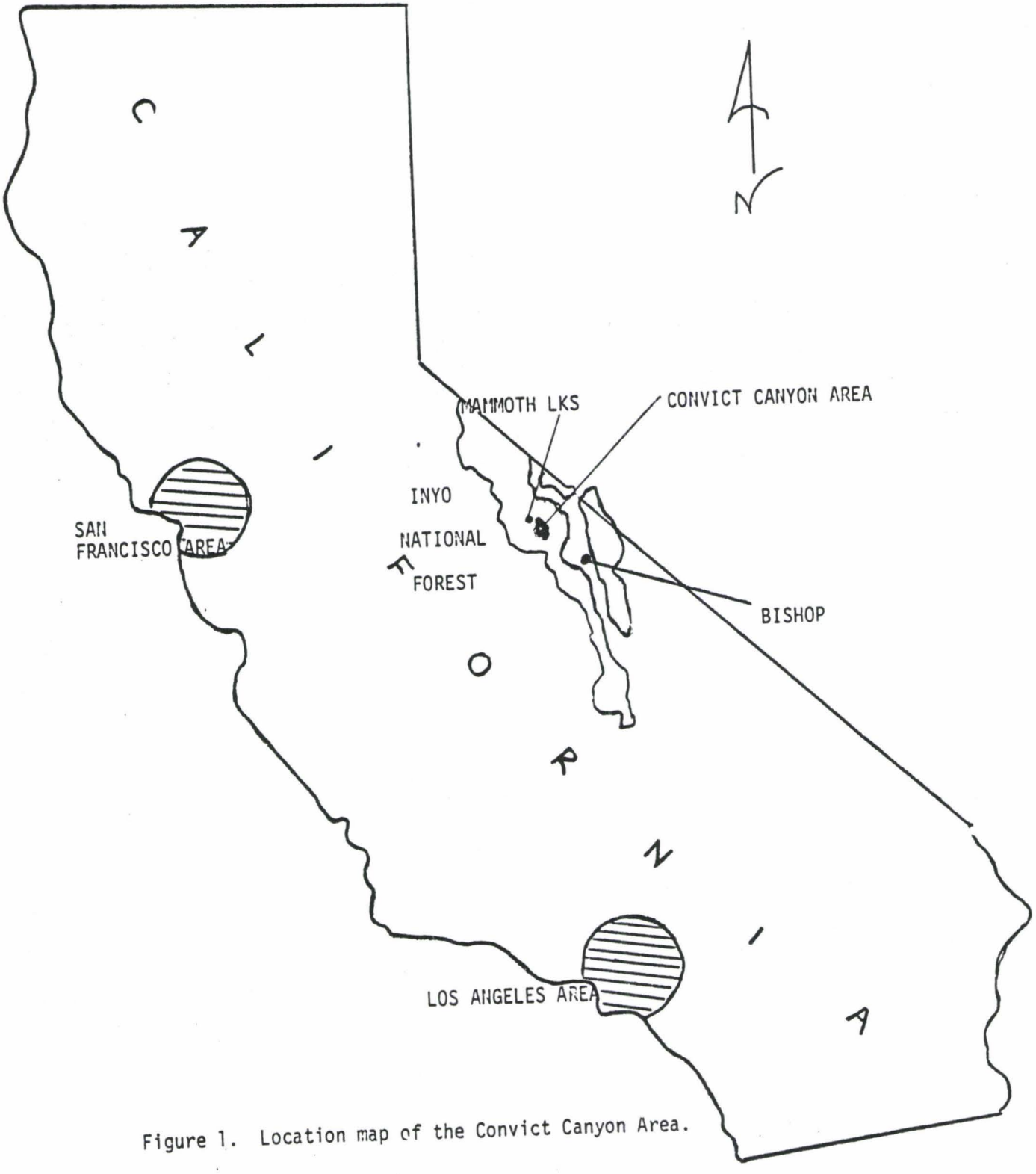


Figure 1. Location map of the Convict Canyon Area.

characteristic of overused and crowded wilderness are evident, but have not yet reached the critical stage. Nevertheless, periodic monitoring and review of recreational use impact and management policies is warranted to anticipate future problems.

There are approximately 13,000 acres in the Convict Canyon Area. Elevations range from about 8,000 feet to the top of Mt. Baldwin at 12,614 feet. The area is usually covered by snow from November through June. There are ten lakes and numerous streams. The area is physically isolated from other backcountry areas, consisting of predominately narrow canyons with very steep slopes. Access is almost entirely from the east by way of Highway 395 and the Convict Lake Road (see map in Appendix A). The only other access is by 4-wheel drive vehicles up from Laurel Canyon Road. Very few people attempt to access the area through Laurel Canyon. Table 1 displays 1984 trail use data for the Convict Canyon Area.

Table 1. Convict Canyon trail use data for 1984.

Trail	Number of Groups (Visitor Permits)	Percentage of Total Groups
Convict Trail	515	93
Laurel Trail	37	7
Total	552	100

An estimated 1,283 people visited the Convict Canyon Area from early April through late October. The majority of visits were from day users (55%). However, 86 percent of the visitor day (12 hours/visitor day) use was from overnight users. Only 7 percent of the visits were from

people using horses, but this figure misrepresents the amount of past horse use in Convict Canyon. Historically, horse users represented approximately 31 percent of the total overnight and 16 percent of the day use visits within Convict Canyon (refer to Appendix B). A damaged bridge in Convict Canyon and problems at the local pack station are probably reasons for the decrease in use by stock over the last eight years.

Generally steep terrain restricts most travel to a well maintained trail system that interconnects the high-mountain lakes. There are 10 miles of maintained trail in the Convict Canyon drainage. Two and one-half miles beyond the Convict Canyon Trailhead, the trail crosses Convict Creek. This crossing is very dangerous during high water and in 1982, a bridge was placed at this location. However, the winter of 1982-83 destroyed it. Efforts to replace the bridge began in 1984, with expected completion by July, 1985.

Management goals and policies for the Convict Canyon Area are found in the John Muir Wilderness Management Plan (USDA Forest Service, 1978). A summary of the most important objectives pertaining to the management of Convict Canyon is listed in Appendix C.

E. Problem Statement

Past recreational use in wilderness has often degraded the natural environment and recreation experience opportunities. Generally, management has reacted to these impacts rather than anticipating and preventing them. Hence, most management objectives for these areas are aimed at mitigating problems and improving situations. Areas not recognized to be "overused" are often ignored until problems surface. There is a need to analyze recreation use and impacts and to determine capacities in areas not thought to be "overused" in order to prevent future unacceptable impacts.

In an effort to avoid "unacceptable changes" in Convict Canyon, thoughtful decisions regarding use limitations need to be made now. Information provided from this study will be useful to the District Ranger and Forest Supervisor as a basis for their management decisions.

The broad objective of this study is to examine the recreation use and management of Convict Canyon. More specifically, this study will:

(1) establish specific management objectives,
(2) evaluate the impact of day users,
(3) estimate the physical capability for overnight camping,
(4) estimate the number of encounters for overnight parties,
(5) obtain feedback from visitors using the area with respect to factors affecting their trip satisfaction,
(6) recommend a maximum capacity, and
(7) evaluate and recommend appropriate implementation guidelines and use allocation methods.

F. Delimitations

The purpose of this section is to define the limits of generalization of this study. This study is limited to (1) the use and capacity estimation of the Convict Canyon Area, (2) the heavy use summer season, and (3) public comments collected during 1984.

The findings and recommendations of this study will not be generalizable to other areas. A capacity determination developed from this study will reflect only the characteristics and management objectives for the Convict Canyon Area.

Data collected in this study originated from use and biophysical situations during the heavy use summer season. Use occurred before and after the sampling period and was not considered. Use during the winter is very light and

winter capacity would be expected to be somewhat different than summer capacity, hence, winter use has little relevance to a determination of summer use capacity.

Comments collected in this study were from Convict Canyon Wilderness users responding to conditions they found in the area for the 1984 season. Their comments have little or no application to other areas.

G. Limitations

Generalizations drawn from findings and recommendations in this study must be done with caution because of certain limitations.

Due to the time constraints imposed on completing this project, it was not possible to develop a data base specifically for the calculation of carrying capacity. Thus, it was necessary to reply upon analysis of much existing data. Time did not allow for field verifications of judgements about campsites, impacted areas, etc. And, it is recognized that information is lacking concerning certain capacity aspects, particularly the biological environment.

Data collections instruments used in this study were not the "state-of-the-art". The reliability and validity of these tools are unknown.

II. LITERATURE REVIEW

A. Wilderness Carrying Capacity Concept

The concept of wilderness carrying capacity has been the subject of considerable research and interest in the literature (Wagar, 1964; Lucas, 1964; Frissell and Stankey, 1972; Stankey and Lime, 1973; Lime, 1976, Stankey, 1980). More than a decade ago, Stankey and Lime (1973) published an annotated bibliography listing over 20 articles defining recreational carrying capacity. More recently, over 100 articles relating to carrying capacity were found during a literature search by Western Forest Information Network in 1984. Despite the growing body of capacity literature, the basic conceptual framework for carrying capacity has changed very little (Lime, 1976).

Simply stated, wilderness recreation carrying capacity (elsewhere referred to in this paper as merely "carrying capacity") is the capability of an area to produce wilderness-dependent experiences. It is the basic framework used to maintain harmony between recreational use and its impacts on the social and biophysical attributes of wilderness (Hendee et al., 1978). Lime(1976) offers a more traditional definition; that being "...the amount and character of use an area can sustain over a specified time period without causing unacceptable change to the physical environment or to the experience of the user."

Carrying capacity is composed of two basic factors. First, is the biological and physical capacity, which describes the ability of the site or area to sustain a given level of recreation use. Examples might be the tolerance level of wildlife for human disturbances or the actual space available for camping around a lake. The second aspect of carrying capacity is social in nature. It is the limit associated with the effects people have on each other before satisfaction declines beyond an unacceptable level.

Variables commonly believed to affect social carrying capacity in wilderness include such things as: number of encounters, campsite solitude, resource damage, littering and behavior of others.

Hendee et al. (1978) offer four qualifications for applying a carrying capacity concept to wilderness planning. First, a carrying capacity determination is a judgemental decision. Second, clear management objectives are needed to make carrying capacity decisions. Third, carrying capacity decisions must be made in light of an understanding of the range of available alternative opportunities. And fourth, carrying capacity is a probabalistic concept, not an absolute measure. Carrying capacity must be considered as a means to an end, not an absolute limit that is inherent in each area (Wagar, 1964).

Studies demonstrate that only small amounts of recreation use produce large amounts of change, both ecologically and socially. The qualities of naturalness and solitude quickly diminish as use increases. Permitted to go unregulated, this use will eventually degrade, or even destroy, wilderness quality.

The underlying fact of change is basic to a grasp of the carrying capacity concept (Stankey, 1973). Wilderness ecosystems constantly change, however, it is the man-caused changes that concern managers. Managers are charged with minimizing the changes on the wilderness environment caused by direct impacts of man or from management policies. The question becomes "How much change do we accept?" Or, as stated by Frissell and Stankey (1972), "What are the 'limits of acceptable change' that may occur in the ecological and social qualities of a recreation opportunity?".

A model used by Stankey (1973) to illustrate the function of defining limits of acceptable change within the carrying capacity concept is shown in figure 2. Hendee et al.

(1978) suggest that "limits of acceptable change" for each environmental parameter should be established. However, they recognized that no clearcut procedures exist for doing so. Establishing standards that specify that conditions will not exceed those beyond a certain state is recommended as a starting point. For a given area, either the ecological or social factors can lead to a determination that an area has reached its capacity. The most sensitive indicator establishes a point at which managers must act. This becomes the capacity for the area given the current management objectives and under that environmental condition.

"Establishing carrying capacities then is not a process of developing magic numbers that represent how much use to allow. Instead, it is a management concept, a framework for deciding what social and environmental conditions we want to offer, estimating the probable consequences of different use configurations on the desired outcome, and implementing actions to achieve those objectives. Judgement is an essential component in this process. It is the result of experience, research data, basic inventory information, and good common sense" (Hendee et al., 1978).

B. Ecological Research

Ecological alterations resulting from recreational use in wilderness are unfortunate but inevitable. Keeping these impacts within acceptable limits is a major challenge for managers. In general, due to a limited understanding of the wilderness ecology, managers lack the ability to predict the effects of use on the biological-physical environment (Hendee et al., 1978).

Many ecological impacts, such as water pollution and wildlife harassment are essentially invisible to the

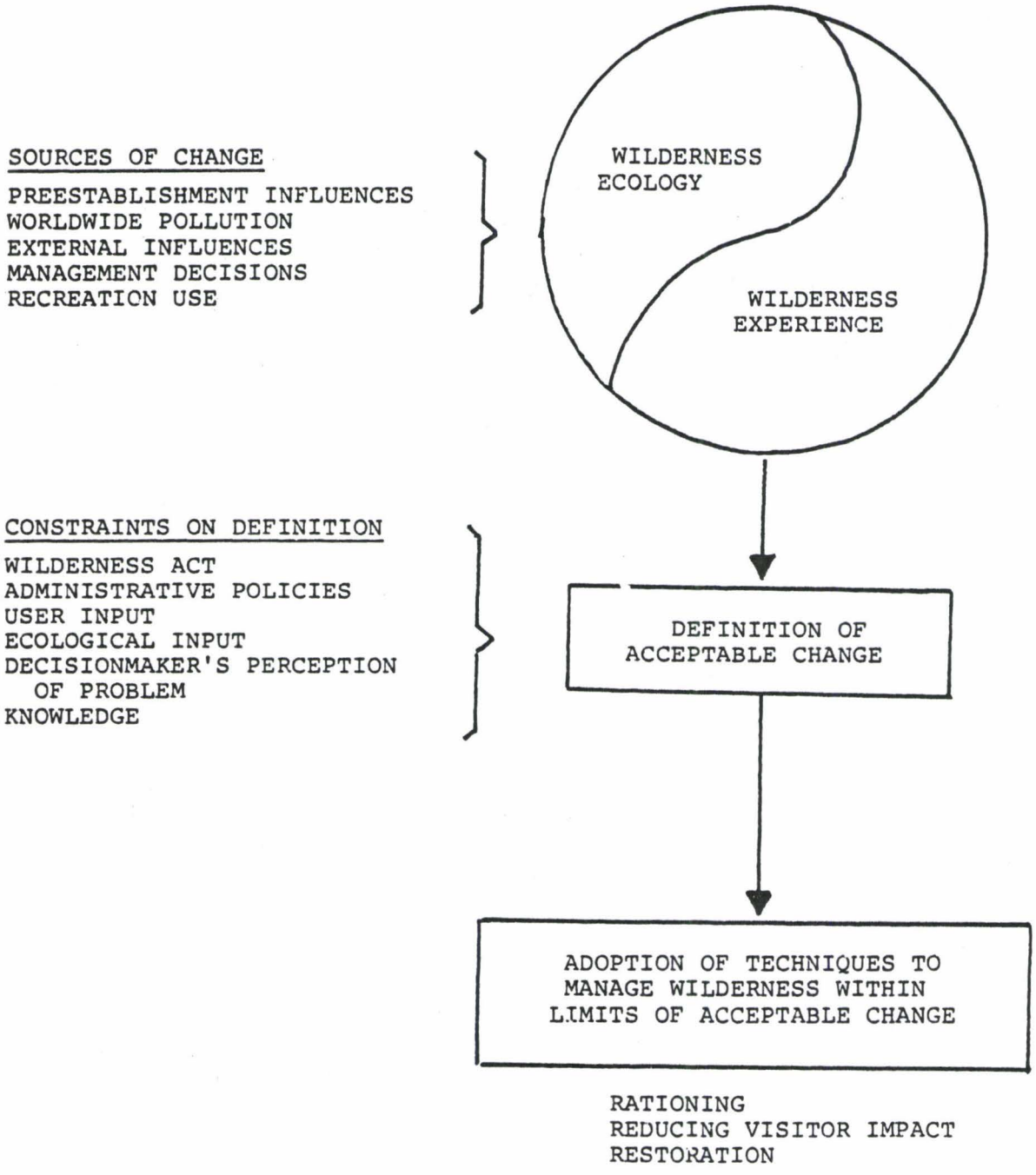


FIGURE 2. Model of carrying capacity as it applies to Wilderness. (Reproduced from Stankey, 1973).

ıed eye. Other impacts, like soil erosion and
tion damage, are easily recognized by the casual
ɜr. Possibly for this reason, the primary focus of
ical research has centered around noticeable impacts
s areas of concentrated use (campsites and trails).

ch has found that recreational use removes protective
cover and compacts soil in campsites (LaPage, 1967).
ɔd infiltration of water, increased runoff and soil
ɔn are changes commonly believed to result. Further,
damage is done with only light use. Frissell and
ı (1965) studying campsite impact in the Boundary
ɜ Canoe Area noted that lightly used campsites (less
30 days each season) had lost 80 percent of their
ɜ cover while heavily used campsites (61 to 90 days
season) had lost 87 percent. Another study reported
most campsite impact resulted from the first two years
e (Merriam and Smith, 1974).

impacted, vegetation and soil recover extremely slow
.ard and Marr, 1971). The amount of alteration and the
ɾery rate vary greatly from site to site. While
ɔilitation measures could shorten the recovery period,
appropriateness of such actions in wilderness is
roversial.

intensity is generally considered to be a poor
icator of impact (LaPage, 1967). Type of use and site
ation have been found to be more important than amount
use. Frissell (1973) reported substantially more impact
ɔm stock users than an equal number of hiker users in the
ınish Peaks Primitive Area in Montana. Horse camps were
ıerally ten times larger and had seven times as much bare
ɔund.

Cmpsites near water have been the subject of concern since
tey are generally located within what is considered a

fragile zone. These sites generally have moist soil which are easily affected by use and are potential sources for water pollution. Concentrated use near lakeshores can cause benthic plant population changes and a concentration of certain ions (Erman, 1979). However, water quality studies suggest that pollution from human sources is only a minor problem (Silverman and Erman, 1979).

Helgath (1975) studying trail deterioration in the Selway-Bitterroot Wilderness in Idaho found that use is not the main cause of deterioration -- that the choice of location for the trail and how well it is built and maintained are more important.

For many wilderness areas, a major problem is the ecological role of natural fire and the impact of its control. Natural fire has played an integral role in creating and maintaining the natural environment. Controlling it, it becomes unnatural by definition and character. Most of the Convict Canyon Area is little affected by past fire control policies because of its alpine environment.

C. Social Research

In many respects, more is known about how varying use conditions affect visitor experiences than how they affect the biophysical environment. Lucas (1974) stressed that we do not know nearly enough about how people use the wilderness, what they are seeking, or how different kinds of policies affect their behavior and satisfaction.

Solitude is a quality commonly associated with wilderness. Intuitively, a low intensity of use is necessary to preserve this attribute. Lucas (1964) reported that most canoeists in the Boundary Waters Canoe Area (BWCA) considered three encounters with others to be the maximum

before their sense of being in a wilderness was affected. Stankey (1971) studied user perception of capacity to four wildernesses -- the Bob Marshall in Montana, the Bridger in Wyoming, the High Unitas in Utah, and the BWCA in Minnesota -- to consider how amount of use, type of use, location and depreciative behavior from encounters affected user satisfaction. He found visitors satisfaction diminishing after about two encounters per day. However, even though he found a declining level of preference for increased levels of encounters, he reported that most visitors felt other characteristics of groups encountered, such as size, method of travel or behavior, were more important than their mere presence. Solitude at the campsite was concluded to be an important aspect of the wilderness experience. Encounters along the trail disturbed visitors much less than at the campsite. In fact, Stankey suggested that campsite solitude might be a serious "bottleneck on the area's social carrying capacity".

According to Stankey's findings, wilderness users mentally zone areas according to the area's location from a trailhead and react differently about encounters between these zones. More encounters are expected and tolerated near trailheads. Badger (1975) reported that overall, users preferred a level of contact about half of what they would actually tolerate.

Stankey's research further confirmed observations by field managers that some users dislike encounters with groups traveling by methods different than they did (hikers encountering horseback users for instance). Badger (1975) also reported that Rawah Wilderness hiker users in Colorado were more tolerant of other hikers than they were of horse users.

The behavior of others has been suggested as possibly the most critical impact on users experience (Stankey, 1971; Badger, 1975; Lee, 1975). This is partially true for users

highly dependent upon a wilderness area for satisfying their needs. To members of a large group concerned about socializing in wilderness, among other things, playing "frisbee games" might seem like fun. However, such behavior could be extremely disturbing to others who encountered this group and were expecting to find solitude consider such actions inappropriate in wilderness.

During the early 70's, a study (Habermehl, 1973) conducted in the Minarets Wilderness in California (adjacent to the Convict Canyon Area), indicated that visitors objected to litter, other people, worn trails, insects and worn areas. Habermehl's study reported that 76 percent of the respondents felt there were "too many users of wilderness areas", and 58 percent said there were more users than desired. Nonetheless, only about 3 percent of the respondents stated they would not return to the area.

In Yosemite National Park backcountry, Absher and Lee's (1978) data indicated that, for most visitors, a desire to be totally alone is neither realistic nor common. Their data showed that the type of crowding a visitor feels from inappropriate behavior of others is related to the distance from the roadhead to the site of the interaction. Simple use intensity at a given locale did not directly relate to feelings of crowding. Interestingly, in their study, experienced users were not found to seek out the remotest corners of the park any more than less experienced users. They concluded, "The perception of crowding appears to be partially a learned response... there is a consistent, negative relationship between years of experience and the reporting of some crowding affect... it argues for a greater degree of flexibility or tolerance in response to the less desired situations, since these seem most likely to occur at the beginning, and end of the journey." Absher and Lee noted that people desiring quietude consistently

responded more negatively for all measures of crowding (sheer number of people, the numbers in relation to their expectations or the behavior of others).

Stankey (1980) found users to two wilderness areas (Desolation in California and Spanish Peaks in Montana) exhibiting drastically different use intensities, shared similar ideas of what wilderness ought to be. This supported previous studies (ORRRC, 1962; Stankey, 1971) that reported similar characteristics, expectations and satisfactions between visitors. However, Stankey did report that visitors to the more intensively used area were more tolerant of increasing encounters than visitors to the lightly used area. He concluded that, "While individual wildernesses have obvious unique qualities about them, it is important that managers recognize that the general experiences sought by visitors probably vary little across space and, perhaps, time. Thus, it does not necessarily require a completely comprehensive profile of visitor data to manage wilderness".

Hendee et al. (1978) warn that visitor perceptions of crowding and overuse can be misleading. Little correlation seems to exist between the amount of use visitors actually encounter and their level of satisfaction. So, is solitude important? Wilderness areas, according to the Wilderness Act, should provide opportunities for solitude, however, for some people using wilderness, it may not be important. Those users to whom solitude is especially important, may have already been displaced from the study area. Or, while the area was crowded and impossible to find solitude, users report they had a satisfying experience anyway because other features of their trip made it worthwhile.

"Rather than managing to maximize satisfaction or uncritically accepting the argument that because there is

little observed relationship between increasing use levels and satisfaction, solitude is not important, the task of wilderness managers ought to be to develop policies to insure preservation of opportunities producing wilderness-dependent experiences. Solitude is an important feature of the wilderness experience to many people and is backed by a legislative mandate. Increasing use restricts the degree to which visitors can find solitude and although there are various techniques or mechanisms that people can adopt to achieve solitude (e.g. going during the off-season, traveling cross country), the opportunity to find solitude will eventually diminish if use continues to grow. Rather than attempting to define capacity through some quantitative estimation of satisfaction, the challenge is to develop area management plans that insure maintenance of opportunities where the range of human contact normally prevailing is low" (Hendee et al., 1978).

D. Approaches to Visitor Management

Gilbert et al. (1972) identified 24 controls available to wilderness managers. These controls were categorized as either "regulatory" or "manipulative". Regulatory controls involve direct management over the visitor; for instance, imposing fines, zoning incompatible uses, limiting camping or campfires, requiring reservations, imposing trailhead quotas, etc. Regulatory controls specify where, when, or how visitors may travel or camp (Fish and Bury, 1981). Manipulative management consists of indirect controls over the visitor. These actions are generally so subtle and unobstrusive that visitors don't recognize that the manager is attempting to modify their behavior. Physically altering trails or roads to make them more (or less) difficult, education of users and requiring a demonstration of knowledge or skills are examples of manipulative controls.

Visitors generally prefer indirect management techniques (Stankey, 1971). Hendee et al. (1978) recommend that direct controls should be used only after indirect management fails to achieve the desired effect. Indirect management techniques better protect visitor's free choice and sense of freedom while using wilderness. When these basic guidelines are followed, it seems the visitor accepts and supports direct controls when clearly justified (Fazio and Gilbert, 1974; Hendee and Lucas, 1973; Absher and Lee, 1978).

III. PROCEDURE

Carrying capacity research has confirmed much of what many people already believed. The number of others present, number of encounters, behavior of others, kinds of other users, campsite privacy, and user's perceptions are critical factors to consider in developing a social capacity.

In this study, two principal subjects were examined to evaluate the capacity factors named above: the user, and the campsite.

A. Subjects

1. Users -- Use characteristics - People registering to obtain a visitor permit for entering the Convict Canyon Area (between early April and late October of 1984) constituted the study population. The total population was considered.

2. Users -- Their comments - A random sample population of 200 users registering for a visitor permit (described above) were the subjects for this portion of the study. This sample included both day and overnight users.

   Differences within a party of wilderness travelers (Jubenville, 1971) were recognized but not controlled for. Generally, party leaders register to obtain a visitor permit for the group. At least one study of wilderness users found party leaders to be more knowledgeable about wilderness than party members (Bramlette, 1977). Hence, it is recognized that the study subjects may not be representative of the total user population; subjects probably are more knowledgeable about wilderness and perceive things differently than other members of their party.

3. Campsites - All identifiable campsites created by impromptu use of recreationists in the Convict Canyon Area constituted the study population. A total of 65 campsites existed.

B. Instrumentation

1. Visitor Permit - The standardized visitor permit (Appendix D) was used to collect raw data on each party. The visitor permit provided the following: the size of the group, where the party leader lives, mode of travel, number of stock, date of entry and exit, and entry and exit locations.

2. Letter and Response Form - A "letter" from the District Ranger and suggested "response form" were used to obtain visitor feedback concerning capacity variables (use, solitude, crowding, resource damage, management, etc.). Refer to Appendix E. This instrument offered an option to a structured questionnaire, which could have taken as long as a year to receive Office of Management and Budget approval for use. The substance of this instrument was developed from questions previously asked of wilderness users by researchers to evaluate factors believed to affect visitor experiences. This instrument could not ask specific questions, but suggested topics of concern on which to comment. The "letter and response form" received review and refinement by the District Ranger and Forest Supervisor's Recreation Staff, all experienced and trained in wilderness and recreation management.

Obviously, this instrument is not statistically reliable. However, it is an excellent vehicle for sensing the user about the same information asked for

through a more reliable questionnaire. It might be more appropriate to use in this study considering the type of data sought. The unstructured and open-ended nature of this tool provides users with a greater opportunity to express their feelings and to show intensity than would a structured questionnaire.

3. Code-A-Site - Code-A-Site, a system for inventorying dispersed recreation sites developed by Hendee et al. (1976) was employed to gather campsite data. The basic steps in applying Code-A-Site, as explained by Hendee et al., were followed.

   Code-A-Site was selected as a system for collecting campsite data because it provides for objective and subjective assessments of site characteristics, use and management, and can be completed by a wilderness ranger. Basic information about each campsite can be collected: location, capacity, available resources (such as firewood, water, forage, and scenery), estimates of environmental impacts, proximity to other sites, etc.

C. Collection of Data

1. Visitor Permit - Users of Convict Canyon were required to obtain a permit prior to entry. Permits were available at a self-issuing station near the wilderness boundary or at the Mammoth Visitor Center. The self-serve registration station was located in Convict Canyon at the wilderness boundary, over a mile and a half from the trailhead. Studies have found self-registration compliance for backcountry users to be very poor (Lucas, 1975). However, regular checks by a Wilderness Ranger in Convict Canyon indicated that this was not the case in Convict Canyon.

   The station was maintained on a weekly basis, and was apparently not disturbed. The majority of the users

followed the directions for completing the permit and provided complete data about their group. Only a few permits were incomplete or unusable.

Users obtaining permits prior to their trip at the Mammoth Visitor Center were assisted by an Information Aid in completing the permit. Permits were available between 8:00 a.m. and 5:00 p.m., daily.

2. Letter and Response Form - The 200 sample population received a letter and response form from the District Ranger on November 6, 1984. Each response form was pre-coded with the following information about the subject: day vs. overnight use, weekday and low use periods vs. weekends/holidays and heavy use periods. The deadline for responding was November 30, 1984. Each response form was printed with a return address and was postage-paid. Directions for returning the response forms were printed in the introduction of the form.

   The response rate was 46 percent. No followup letters were sent. Eighty-nine response forms were completed and returned. Eight letter and response form packages were returned from the postal service as undeliverable.

3. Code-A-Site - A fifth season wilderness ranger conducted the Code-A-Site inventory of the Convict Canyon campsites using directions provided by Hendee et al. (1976). This inventory was completed during the course of her normal duties. The data collection period was August, after the snow had melted.

D. Treatment of Data

1. Visitor Permit - Simple frequencies, percentages and averages were calculated from the visitor permit data

to summarize mode-of-travel, residence of group leader, persons present on each day, group size, length of stay, and visitor use.

All treatment of the data was done manually, by either an employee or the author.

Group encounters per day were estimated on twelve selected days by using the procedure described in Appendix F.

Travel simulation models are common, but not for the requirements of wilderness with the interest in encounters (Shechter and Lucas, 1980). One travel simulation model (GPSS), developed by V. Kerry Smith, has been used in wilderness use management and has proven to be quite valid. This small-scale project did not warrant considering use of the GPSS system. However, the variables used and the basic principles applied in estimating encounters in this study were similar to those employed by the GPSS system.

2. User Response - To assure reliability in coding user's responses, the author coded and treated all information given on response forms.

   The analysis of the data consisted of interpreting the responses and tabulating frequencies of similar comments into common categories. Various cross tabulations of frequencies and percentages of the data were completed.

3. Code-A-Site - Campsite inventory data was summarized by lakes and for the entire study area. Campsite locations were mapped. Pertinent information about each campsite was summarized as follows: size, use intensity, maximum capacity, distance to water, wood availability, vegetation type, cover density and stock outfitter use.

4. Management Plan Capacity Formula - The John Muir Wilderness Management Plan (1978) directs that the development of entry quota levels be established according to the following formula: number of campsites times average number in party divided by average length of stay (number of nights). The formula makes the following assumptions:

(1) Campsites must be large enough for the average group size of four.

(2) Campsites must be out of sight and sound of each other.

(3) Campsites are, where possible, at least 100 feet from water and out of meadows.

(4) Campsites are in an area currently in use.

All campsites not meeting the above criteria were eliminated from consideration.

V. ANALYSIS OF DATA

A. Use Characteristics

1. Amount of Use

Visitor use, calculated from visitor permit data, is displayed in Table 2. One visitor day represents 12 hours of use.

Table 2. User groups by visitor use (visitor days) according to trailheads, Convict Canyon Area, 1984.

Users		VISITOR USE		
		Trail Heads		
	(N)[1]	Convict	Laurel	Total
		--(visitor days)--		
Day Users	(710)	355	20	375
Overnight Users	(573)	1988	268	2,256
Total	1,283	2,343	288	2,631

[1] Increased 10 percent for users not obtaining permits.

Use during 1984 closely duplicated reported use for 1972, another relatively long use-season year. The Convict Canyon Area's use intensity factor (visitor days/acre) is slightly over 0.2, which compares with many wildernesses not believed to be overused. The Selway-Bitterroot and Sawtooth Wildernesses in Idaho and the Spanish Peaks in Montana are examples (Hendee et al., 1978). Comparatively, the entire John Muir Wilderness shows a 1.7 visitor day/acre ratio. However, the visitor day/acre criteria is a very

inaccurate measure of use intensity (Stankey et al., 1974), since it assumes an even distribution of use over space and time. The very steep terrain of the Convict Canyon Area tends to concentrate use within very few travel corridors and around lakes.

2. Type of User

Visitors were classified as either day, overnight, or commercial stock users. Table 3 presents user data for the Convict Canyon Area during 1984. A 10 percent non-compliance factor (based upon a wilderness ranger's estimate) was used to adjust the visitor permit data to arrive at a total use estimate.

Table 3. Type of user by number of visits, Convict Canyon Area, 1984

Type of User	VISITS (N)	VISITS Adjusted for Non-Compliance (N)	VISITS Percentage of Total
			--(Percent)--
Day Users	(646)	(710)	55
Overnight Users	(440)	(484)	38
Outfitter Guided Users	(81)	(89)	7
Total	(1,167)	(1,283)	100

Historically, commercial stock users accounted for a greater amount of the total use in the Convict Canyon Area. Between 1968 and 1975, visitor use days by outfitter guided users was estimated to be equal to that of the overnight hikers (Appendix B). In the past, an estimated 220 overnight visitors were packed

in by stock. The absence of a bridge across Convict Creek and a change in management at the pack station probably are the reasons for the decrease in stock use over the past ten years.

3. Residency

Four categories describing user's residency were developed. "Locals" are defined as those users residing in an area directly in contact with the Convict Canyon Area. For instance, this included such towns as Mammoth Lakes, Bishop, Lone Pine, June Lake, Lee Vining, and Bridgeport. Visitors residing within the area south of Little Lake were categorized as "Southern Californians". Those north of Lake Tahoe were labelled "Northern Californians". Anyone from the west side of the Sierra Nevada range, residing within the central section of the state, were called "central Californians". No one visiting the Convict Canyon Area this season resided in another state. The results are presented in Table 4.

Table 4. Residency of group leaders, Convict Canyon Area, 1984.

Residence	Day Permits N=(309)		Overnight Permits (192)		Totals
	--(Percent)--		--(Percent)--		
Locals	(60)	19.4	(28)	14.6	17
Southern Californians	(181)	58.6	(124)	64.6	61
Central Californians	(13)	4.2	(17)	8.9	6
Northern Californians	(39)	12.6	(16)	8.3	11
Nc Address	(16)	5.2	(7)	3.6	5

As expected, most visitors (78 percent) lived within the local area or in Southern California.

4. Party size

The average size of parties using Convict Canyon for day users, overnight users and outfitter guided users is presented in Table 5.

Table 5. Party size, Convict Canyon Area, 1984.

Type of User	People N=(1,167)	Groups N=(501)	Average Number of People In Party
Day Users	(646)	(309)	2.09
Overnight Users	(440)	(176)	2.50
Outfitter Guided Users	(81)	(16)	5.06
Total			2.33

The average party size for all visitors was 2.33.

5. Length of Stay

The average length of stay for overnight users (backpackers) to the Convict Canyon Area was 3 nights per trip. Outfitter guided parties stayed an average of 6.4 nights per trip. For all overnight users, 3.5 nights per trip was the average length of stay (Table 6).

Other wilderness user studies have reported much variation in length of stay. Merriam and Ammons (1967) found an average length of stay of eight days in the Bob Marshall Wilderness while Hendee et al. (1968) reported 2.3 days for the average of three northwestern wildernesses. In the Selway-Bitterroot Wilderness, Bramlette (1977) found 4.2 days to be the average length of stay for all overnight

users, excluding outfitters. Outfitters in the Selway-Bitterroot stayed an average of 9.1 days.

Table 6. User groups by length of stay, Convict Canyon Area, 1984.

User Groups	N	Average Length of Stay (nights)
Hikers (overnight)	(440)	3.0
Outfitter Guided Users	(81)	6.4
Total	(521)	3.5

6. People Present Each Day

Day users impact the experiences of others by their presence and impact resources; however, not to the extent of overnight users. On the Inyo, day use is not rationed. Day users generally do not penetrate far into the wilderness and do not affect the overnight camping experience. Crowding near the roadhead, to which day users contribute, is expected and tolerated by most wilderness users (Absher and Lee, 1978). However, it is necessary to consider the impact of day users in a capacity study.

Interestingly, while August produced the greatest number of registered day use visitors (157), it only received less than twice the number of the lighter used months (May, June and even July). By contrast, overnight use during August was more than twelve times that of May, ten times that of June and five times that of July (refer to figures 3 & 4). Contrary to what might be expected, day use increases very little during the heavily used months. In part, this pattern can be explained by: (1) The Convict Canyon Area is accessible relatively early when other popular day hiking

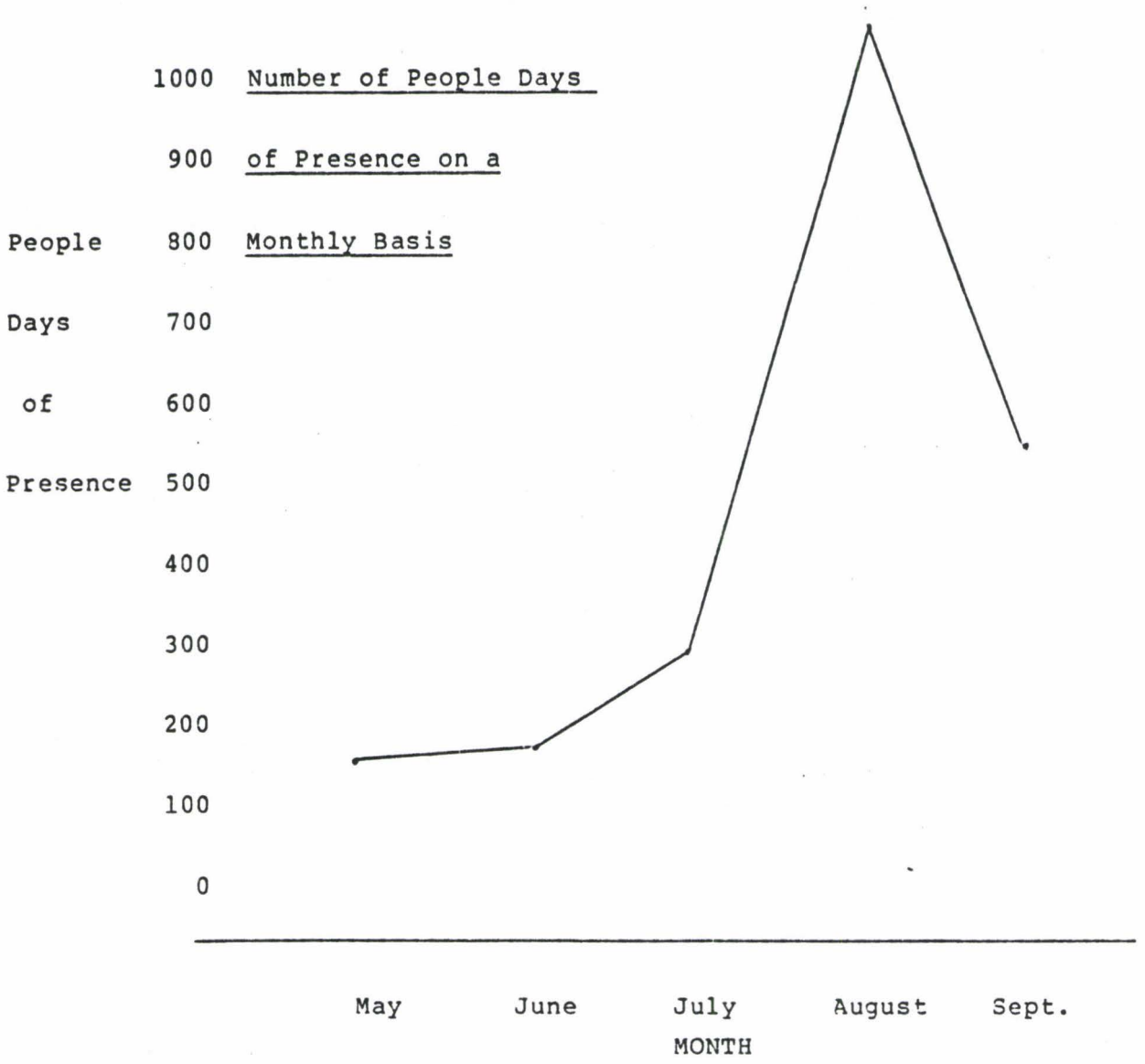


Figure 3 - Convict Canyon monthly overnight people day usage.

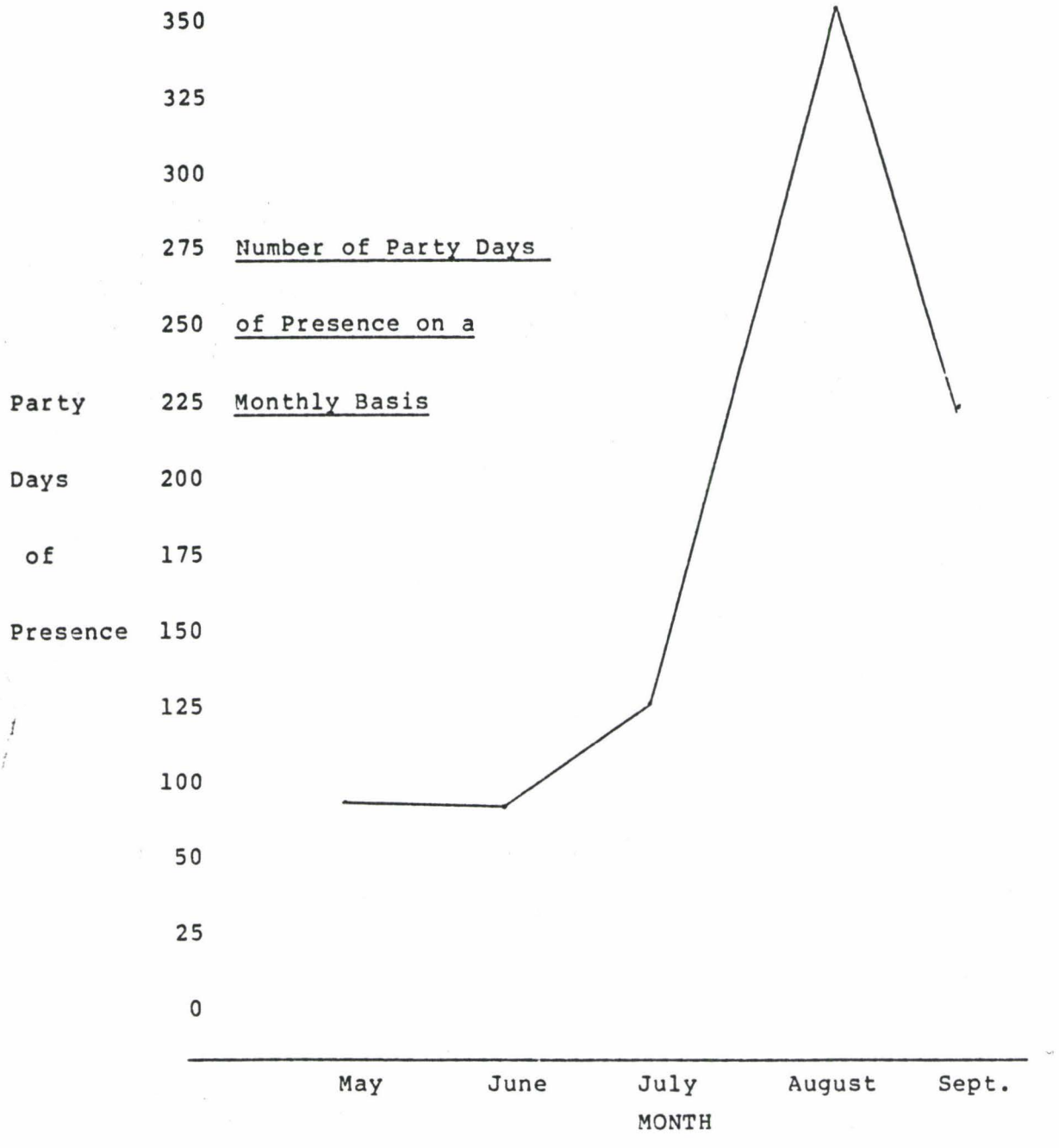


Figure 4 - Convict Canyon monthly overnight party day usage

areas are still snow covered, and (2) day hiking within Convict Canyon is strenuous, particularly during the warmer months of July, August and September.

Even though many more people visit the region during July, August, and September, most prefer easier and cooler hikes elsewhere. This finding indicates that day use in Convict Canyon may be somewhat self-limiting, especially during the peak season. And, since most day use takes place between Convict Lake (outside wilderness) and Mildred Lake (the first overnight camping location), day users probably represent only a small impact and can be discounted when determinating capacity.

Sixty-three percent of the day use occurred on Friday, Saturday, Sunday, or holidays. Use over the weekend does not appear to be drastically imbalanced with weekday use

As expected, few overnight parties used the Convict Canyon Area during the months of May or June. The Memorial Day weekend (the peak use period for these months) produced only four parties. This usage is probably representative of most years. Use was quite evenly distributed throughout these months, with 58 percent occurring on Friday, Saturday, Sunday, or a holiday.

Use during July was also relatively light (only 216 overnight visitor days), with a use distribution between weekends and weekdays of 64 percent to 36 percent, respectively. The peak day in July found seven parties and only 13 people camped in the study area.

Overnight use was concentrated between August 15 and Labor Day weekend (Table 7). The average number of parties before and after that period was four or five. During the peak use period, the average number of groups camped was greater than 15 per night, with a maximum of

34 on the Labor Day weekend. The average of 15 parties/day represented more than 54 people. The 34 parties camped over Labor Day weekend represented over 100 people. For weekends and holidays during the peak period, the average use was 62 people/day representing 18 parties. Labor Day weekend averaged 84 people/day and 28 parties.

A complete summary of the number of people and parties (both day and overnight), present in the Convict Canyon Area between May 1 and September 30, 1984, is displayed in Appendix F.

Table 7. Use periods (months) by numbers of people and parties according to user group, Convict Canyon Area, 1984.

Use Periods	USER GROUPS: Day Use		Overnight Use		Total Use[1]		Average Per Day	
	Peo.[2]	Par.[3]	Peo.	Par.	Peo.	Par.	Peo.	Par.
MAY	81	44	81	32	162	76	5.2	2.5
JUN	75	34	119	38	194	72	6.5	2.4
JUL	92	38	216	88	308	126	9.9	4.2
AUG	157	66	1,031	273	1,188	339	38.3	10.9
SEPT	114	60	424	157	538	217	17.9	7.2
Labor Wknd	37	15	299	98	336	113	84.0	28.3

[1] The total does not include parties issued permits during the winter season, April or October. [2] Peo. is people. [3] Par. is parties.

7. Overnight Party Encounters

Wilderness visitors generally feel that a low intensity

se, few or no other encounters, is an important
nsion of the wilderness environment (Stankey, 1971).
number of encounters per day that overnight parties
t have had was estimated on twelve selected days.
ttempt was made to represent the range of parties
day using the area. Results are displayed in
e 8.

use parties were included in the estimations of
ounters with overnight use parties but day use party
ounters were not calculated.

Ta Use days by overnight party encounters, Convict Canyon Area, 1984.

Date	Camping Parties (N)	Day Use Parties (N)	Range	Encounters Per Party Mean	Camped Mean	Travel Mean
13 M	4	3	0-4	2.2	0.5	3.3
26 S	3	2	2-3	2.3	--	2.3
3 5 Sn	6	4	0-5	3.2	2.0	3.8
4 2 Sn	5	3	1-4	3.0	2.5	3.3
5 5 W	10	3	0-5	2.7	0.6	4.8
6 9 Sn	11	5	1-9	5.1	1.8	6.8
7 12 Th	9	6	0-7	4.4	2.3	6.2
8 24 F	15	3	0-11	5.7	1.6	7.8
9 26 Sn	20	3	2-11	7.5	4.0	8.9
10 29 W	16	0	3-8	5.4	3.7	7.1
11 1 F	34	6	2-18	12.0	7.4	14.2
12 21 S	5	4	1-4	2.6	1.0	3.7

Parties travelling, as opposed to camped, on sample days encountered about twice as many other parties. In many cases, the ratio between the two groups was even greater (Table 8). Stankey (1971) reported that wilderness

visitors willing to tolerate more encounters on a trail than a campsite. While using a trail, the normal activity is travel and the expectation of meeting others primarily tempers adverse reactions. This is not the case at the campsite where visitors desire their privacy. At ten or fewer parties within the study area, the average number of encounters per camped party was 1.3. However, travelling parties under the same conditions encountered an average of 3.9 parties per day. When 20 overnight parties per day used the study area camped parties encountered an average of 2.8 other parties while travelling parties encountered 7.6 other parties each day.

When 34 parties camped in the study area over Labor Day weekend, results were 7.4 encounters per camped party and 2.2 encounters per travelling party. Both the campers and travel parties during this Labor Day weekend encountered many more other parties than the 2-3 parties believed to be acceptable to most users according to various studies (Lucas, 1964; Hendee et al., 1968; Stankey, 1971). Only about half of Stankey's total respondents said that up to two encounters per day resulted in a satisfactory experience. He further reported that only about 10 percent of the "strong purists" said that they would have a pleasant experience with 5 or more other backpacker encounters per day. The number of encounters was even less with horse parties.

Lime (1970), studying paddle canoists in the BWCA, found the mean number of groups encountered per day was 16. For only 20 percent of the average sampled was the encounter rate 4 groups or less. He concluded that while there were lakes in the BWCA to experience low frequencies of encounters, the higher levels of congestion experienced in much of the area was disturbing.

Figure 5 shows the basic relationship found between the number of overnight parties and the number of encounters within the study area.

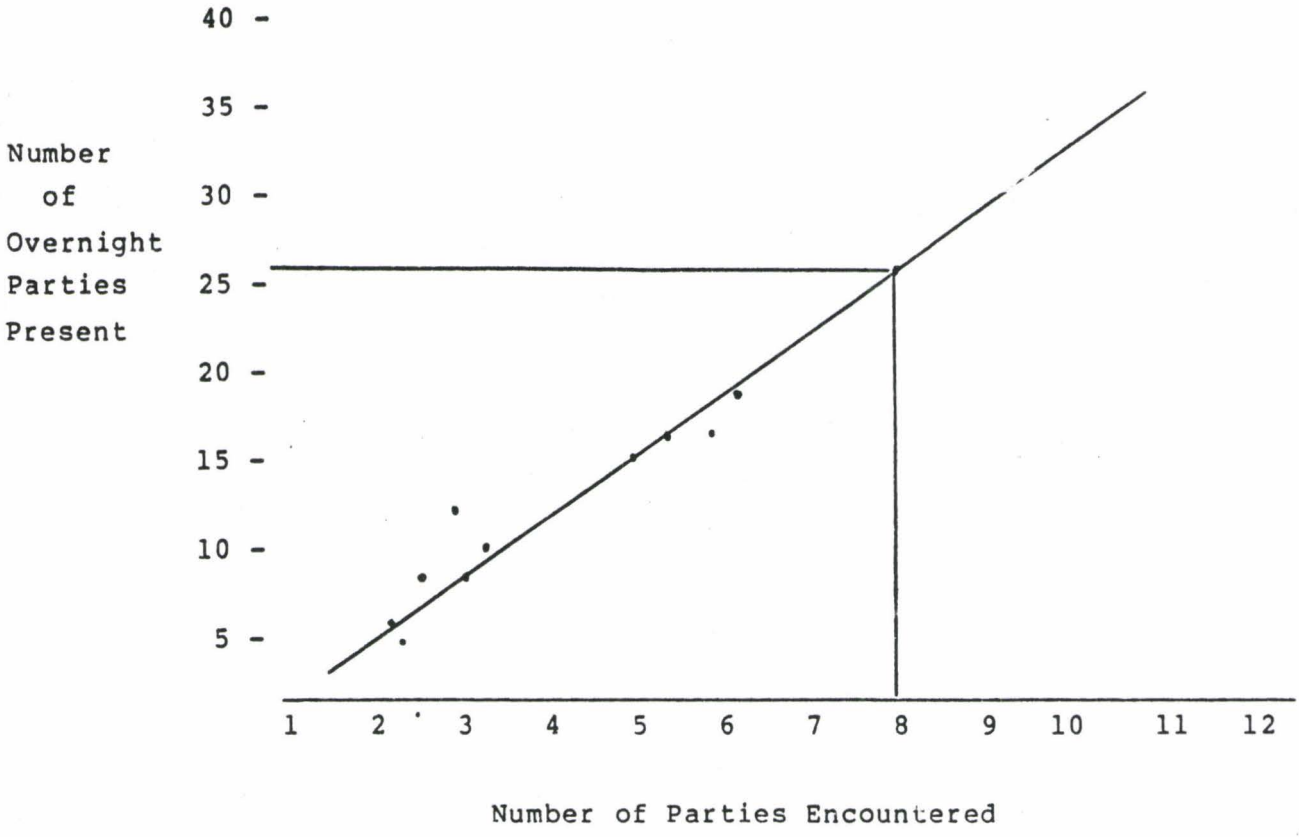


Figure 5 Relationship between the number of overnight parties present in the Convict Canyon Area and the estimated number of other party encounters.

B. User Response

Solitude is one of the most commonly recognized values of wilderness. In fact, the 1964 Wilderness Act states "An area of Wilderness...has outstanding opportunities for solitude...". A low intensity of use and uncrowded conditions generally characterize wilderness areas. However, these factors are relative between people. It was important to "get-a-feel" for the range and intensity of how users perceive these values in the study area.

Various studies (Hendee et al., 1968; Stankey, 1971) have used a purism scale to measure visitors' beliefs and values within the legal framework of the Wilderness Act. These researchers argue that a majority concensus is an inappropriate basis for evaluating user inputs. Instead, they stress that the perceptions of users demonstrating values most compatible with ideals of the Wilderness Act should bear the most weight, even if they are in the minority. Even though the level of purism for respondents was not gauged in this study, it is important to keep this concept in mind when considering their comments.

1. Opportunities for Finding Solitude

Since solitude is a desired attribute of wilderness, users were asked to comment on "opportunities they saw for finding solitude" in Convict Canyon. Seventy percent of the respondents made a statement that indicated they found "many opportunities" to be alone. Another 17 percent said there were many opportunities except for areas between Convict Lake and Mildred Lake, and/or around Mildred and Dorothy Lakes. Thirteen percent of those responding felt that it was either difficult or impossible to find solitude during their visit. Most of those who had trouble finding solitude

[illegible]

Table [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Many.....	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Many, except Convict Caym, Mildred Le & Dorothy Lake...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
It took some effort.....	--	[illegible]	[illegible]	[illegible]	[illegible]
Could not find solitude.....	--	[illegible]	[illegible]	[illegible]	[illegible]

2. Evidence of Overuse

Beat-up campsites, litter, and inability to locate isolated campsites are some of the criteria wilderness visitors use in defining crowding (Stankey, 1973). Respondents were asked about any evidence of overuse they might have observed in the Convict Canyon area. While most of the responses (68 percent) could be categorized into something like "Yes, I observed overuse", in some cases it was difficult to determine whether or not the cited overuse was disturbing or unacceptable to them. At least forty-one percent of

respondents clearly indicated that the overuse impact they observed disturbed them. Approximately one-third of the respondents reported "little or no evidence" of overuse (Table 10).

It was not surprising to find that day users saw less evidence of overuse impact than overnight users. Often, day users remain on the primary trail and do not wander into the campsites, where much of the overuse impact is reported to be located.

Table 10. Response to "evidence of overuse" by user group, Convict Canyon Area, 1984.

	USER GROUPS						
	Day Users			Overnight Users			
	High Use Period		Low Use Period	High Use Period		Low Use Period	Total
Evidence of Overuse Response	Wkdys N=(11)	Wknds (7)	(16)	Wkdys (25)	Wknds (23)	(5)	(87)
	-- (Percent) --						
Little or no evidence.....	5	2	13	7	2	1	30
Evident but apparently not disturbing.	6	3	2	8	6	2	27
Evident and disturbing.....	2	2	3	14	18	2	41

3. Crowded Conditions

When asked directly about "crowded conditions" respondents generally (50 percent) stated they did not encounter crowds. Fifteen percent stated the number of

others was "not bad" or "about right". Over one-third of the respondents stated they had crowded conditions for at least part of their trip (Table 11). Again, overnight users visiting the area during the high use period reported disportionately that they found "crowded conditions".

Table 11. Response to "crowded conditions" by user group, Convict Canyon Area, 1984.

	USER GROUPS						
	Day Users			Overnight Users			
	High Use Period		Low Use Period	High Use Period		Low Use Period	Total
Crowded conditions response	Wkdys N=(12)	Wknds (9)	(13)	Wkdys (21)	Wknds (22)	(5)	(82)
	-- (Percent) --						
No.....	11	5	10	11	7	6	50
Not bad.....	--	--	1	7	6	--	15
Part of Trip.	4	4	2	5	7	-	22
Yes.....	--	3	2	2	6	--	13

4. Achievement of Trip Expectations

As shown in Table 12, respondents reported a high level of success (98 percent) with achieving their trip expectations. All disappointed respondents used the area during the high use period, over weekends or holidays.

Table 12. Response to "achievement of your trip expectations" by user group, Convict Canyon Area, 1984.

Achievement of your trip expectations response	USER GROUPS: Day Users: High Use Period: Wkdys N=(10)	Day Users: High Use Period: Wknds (11)	Day Users: Low Use Period (15)	Overnight Users: High Use Period: Wkdys (22)	Overnight Users: High Use Period: Wknds (15)	Overnight Users: Low Use Period (5)	Total (78)
	-- (Percent) --						
Surpassed Expectations.....	5	5	8	9	4	1	32
Expectations met.	7	6	12	18	12	5	60
Disappointed.....	--	3	--	1	4	--	8

5. Behavior of Others

The importance of other's behavior on the wilderness visitors level of satisfaction is well documented (ORRRC, 1962; Stankey, 1971). It is thought to be a more important determinant of impact than mere presence (Stankey, 1971). Absher and Lee (1978) further suggested that the type of crowding a visitor feels as a result of the inappropriate behavior of others is related to the distance from the roadhead to the problem.

Respondents to the District Ranger's letter overwhelmingly (68 percent) reported a positive feeling about others they encountered. This estimate excludes eight percent of the respondents who reported they did not meet another party (Table 13).

Problems that respondents had with the behavior of others centered around litter, large groups, water pollution, hunting and horses. These problems are commonly mentioned by wilderness users in other studies. Wilderness "purists" have particularly expressed their dislike for these perceived problems (Stankey, 1971).

Table 13. Response to "behavior of others" by user group, Convict Canyon Area, 1984.

	USER GROUPS						
	Day Users			Overnight Users			
	High Use Period		Low Use Period	High Use Period		Low Use Period	Total
Behavior of others response	Wkdys N =(10)	Wknds (9)	(14)	Wkdys (18)	Wknds (22)	(7)	(80)
	-- (Percent) --						
Did not meet another party....	1	--	3	4	--	--	8
Friendly, helpful, courteous.....	4	9	10	10	5	2	39
No problems.....	4	2	5	5	10	2	29
Large group (loud, etc).....	--	--	--	1	4	--	5
Water Pollution (bathing, etc.)..	1	--	1	-	4	-	6
Litter.....	1	--	--	2	5	1	9
Hunters.....	--	--	--	--	--	2	2
Horse Party Ethics.....	1	--	--	1	--	--	2

6. Need for Facilities

Improvements are generally inappropriate in Wilderness. No one in this study requested "outlandish" facilities, but 53 percent of the responses identified either

Table 14. Response to "need for facilities" by user group, Convict Canyon Area, 1984.

	USER GROUPS						
	Day Users			Overnight Users			
	High Use Period		Low Use Period	High Use Period		Low Use Period	Total
Need for facilities	Wkdys N =(9)	Wknds (10)	(18)	Wkdys (29)	Wknds (29)	(5)	(100)
	-- (Percent) --						
Sufficient.....	5	1	4	4	3	--	17
Don't need convenience facilities.....	1	2	1	6	8	1	19
Don't rebuild bridge.....	--	--	--	2	5	--	7
No more signs...	--	--	--	2	2	--	4
Need more signs.	3	1	5	3	4	1	17
Replace bridge..	--	6	5	10	4	3	28
Better trails...	--	--	2	2	2	__	6
Develop Laurel Access.....	--	--	1	--	1	--	2

[1] N equals the number of responses made by respondents. It was possible for respondents to make responses concerning more than one subject.

signs or bridges in need of some improvement. Hendee et al. (1968) found many users expressing a preference for facilities and improvements that are essentially prohibited by the Wilderness Act. They noted that those persons, in most cases, were not very "wilderness-purist" as measured by their wildernism scores.

The bridge across Convict Creek -- replaced in 1982 and damaged during the winter of 1982-83-- received a wide range of comments. Many respondents were very critical of the bridge's cost and faulty design. However, most (80 percent) that mentioned the bridge asked to have it replaced. Seven percent of the total responses made it clear that the bridge was inappropriate and not wanted. A few respondents felt the bridge would encourage more use, particularly from stock. The lack of a bridge was seen as an opportunity to "passively" regulate use in Convict Canyon (Appendix H).

Even though there was support for more or upgraded facilities, there was also strong opposition to any more facilities. Seventeen percent of the responses showed the existing level of facilities were "sufficient", while 19 percent showed that "convenience facilities" were not needed or desired.

The majority of the comments about needing more trails or signs were specific to one location or another. For example, respondents would ask for a sign at Mildred Lake pointing out the trail direction rather than request more signs in general.

7. Need for Management Policies

Studies have reported that visitors strongly support managers actions to reduce user impacts in wilderness (Hendee et al., 1968; Absher and Lee,1975; Hendee et al., 1978). Respondents to the Ranger's letter offered responses that coincided with those previous reports.

Table 15 indicates that only 16 percent of the respondents rejected the idea that management policies, such as travel permits, use limits, and camping restrictions, are needed to administer the study area.

Many of those respondents qualified their statements by saying, "Controls should be used when actually warranted," or something to that effect.

Twenty-nine percent of the respondents supported the present management while another 38 percent stressed the need to regulate use. Specifically, 20 percent of the responses cited the need for some form of maximum use limit and/or campfire restrictions. The lack of wood for fire was mentioned many times and seen as a major source of resource impact around many lakes where people camp.

Table 15. Response to "need for management policies to manage use" by use group, Convict Canyon Area 1984.

	USER GROUP						
	Day Users			Overnight Users			
Need for management policies to manage use response	High Use Period		Low Use Period	High Use Period		Low Use Period	Total
	Wkdys N =(12)	Wknds (9)	(14)	Wkdys (23)	Wknds (23)	(5)	(86)
	-- (Percent) --						
I support present mgt.....	6	3	6	8	5	1	29
Use should be regulated.....	5	3	5	12	8	5	38
Use passive regulations.....	--	--	--	--	2	--	2
Don't feel any are needed.....	1	2	1	5	6	1	16
I like self-registration.....	2	1	--	1	--	--	4
Control stock.....	1	--	2	--	4	--	7
Control firearm use.....	--	--	2	--	2	--	4

The number of responses (7 percent) asking for increased control of pack animals was surprising considering the incidental use by that group in 1984. Stankey (1971) found that in the Bridger Wilderness, backpacker visitors experienced over a 30 percent decline in their over-all level of satisfaction upon an encounter with only one horse party as opposed to one backpacker group. What is important is that increased levels of stock use have disproportionate impacts on hiker satisfaction levels. Hikers will tolerate fewer encounters and impacts by horse users than other backpackers.

8. Reasons for Visiting Convict Canyon

Reasons given by respondents for visiting the Convict Canyon Area are shown in Table 16. The majority (66 percent) can be classified as "appreciative-symbolic" activities according to a classification approach devised by Hendee et al. (1971). Preservation of the environment in its natural state is necessary for maximum enjoyment of most activities included in this group (Hendee et al., 1971)-- seeing natural scenery, hiking and photography are examples.

Respondents placed into the "extractive-symbolic" group (18 percent) are characterized by engaging in activities that extract trophies from the natural environment. Hunting and fishing are examples.

"Passive-freeplay" activities include such things as "doing camp chores", relaxing or sunbathing. Only 4 percent of the cited responses fell into this category.

Similar to the previous activity category, the "sociable-learning" (visiting, nature study, and singing) and "active-expressive" (organized games, etc) accounted for only 5 percent or less of the reported activities.

In Yosemite, Absher and Lee (1978) attempted to estimate whether the perception of crowding was influenced by the experiences sought by the visitor. They found that people desiring a degree of quietude consistently responded more negatively to the presence and/or behavior of other people encountered. They reported more people than preferred or expected, and disproportionately reacted negatively to the behavior of others. Visitors listing motives that were social or physical in character were less prone to object to crowding.

Table 16. Response to "reasons for visiting Convict Canyon" by user group, Convict Canyon Area, 1984.

Reasons for visiting Convict Canyon response	USER GROUP: Day Users, High Use Period, Wkdys	Day Users, High Use Period, Wknds	Day Users, Low Use Period	Overnight Users, High Use Period, Wkdys	Overnight Users, High Use Period, Wknds	Overnight Users, Low Use Period	Total
N =	(12)	(10)	(14)	(24)	(23)	(5)	(89)
	-- (Percent) --						
Appreciative - symbolic.....	10	8	11	15	16	6	66
Extractive-symbolic.....	2	2	2	6	4	2	18
Passive-Freeplay.....	--	--		--	2	1	14
Sociable-learning.....	--	--	1	2	2	--	5
Active-Expressive.....	1	1	--	2	--	--	4

The high percentage of respondents in the "appreciative-symbolic" and "extractive-symbolic" categories suggest users to this area are generally concerned with low intensities of use and naturalness of the environment. The relationship of activity preference to carrying capacity factors is discussed in detail by Stankey (1974).

Often, more than one activity was reported by a respondent. However, all activities fell into just one category in most cases. When they didn't, an attempt was made to place the respondent into the one category that best reflected his/her overall description of activities.

9. Overall Enjoyment

Table 17 shows a summary of descriptions by respondents of their overall trip enjoyment. As can be seen from reviewing the table, the vast majority (92 percent) reported that they greatly enjoyed their trip. Only

Table 17. Response to "overall enjoyment" by user group, Convict Canyon Area, 1984.

	USER GROUP						
	Day Users			Overnight Users			
	High Use Period		Low Use Period	High Use Period		Low Use Period	Total
Overall enjoyment response	Wkdys	Wknds		Wkdys	Wknds		
N =	(11)	(6)	(14)	(21)	(19)	(5)	(76)
	-- (Percent) --						
Greatly enjoyed it!....	14	8	18	22	22	8	92
Okay.....	--	--	--	3	1	--	4
Disappointed...	--	--	--	3	1	--	4

four percent said they were disappointed, stating there were too many people. As one might expect, the disappointed visited the area during the heavy use period.

10. Miscellaneous Comments

Ten respondents mentioned that they had been directed by a ranger to the Convict Canyon Area when other areas, with trailhead quotas, were at capacity.

Twelve responses were received complimenting the overall work of the Forest Service. Only one respondent complained about misinformation given to him by a ranger. Another four respondents mentioned that the wilderness ranger was very helpful and a "good" worker.

C. Campsite Characteristics

1. Campsite Inventory

A thorough campsite inventory is basic to any wilderness capacity analysis. A complete summary of the 1984 campsite inventory data for Convict Canyon appears in Appendix I.

Overall, 65 campsites, spread between nine lakes were found in the study area. Twenty-nine campsites fitted into a light use category, whereas only 11 appeared to be heavily used and 17 moderately used (Table 18). Dorothy Lake had both the greatest number of campsites (29 percent) and the most intensively used campsites (73 percent).

Table 18. Lakes by inventoried campsite characteristics, Convict Canyon Area, 1984.

Location	Campsites (number)	Campsites (%)	Maximum Capacity (people)	Intensity of Use[1] L	M	H
Mildred Lake	9	13	79	5	3	1
Dorothy Lake	19	29	153	7	4	8
Wit-so-nah-pah Lake	5	8	31	4	1	0
Big Horn Lake	2	3	24	2	0	0
Constance Lake	1	2	4	1	0	0
Bright-Dot Lake	4	6	24	3	1	0
Cloverleaf Lake	10	16	90	4	6	0
Edith Lake	7	11	65	3	2	2
Genevieve Lake	8	12	69	4	3	1
Totals	65	100%	549	33	20	12

[1] L = light use, vegetation around the fire ring trampled. M = moderate use, vegetation around the fire ring killed and vegetation in the sleeping area trampled. H = heavy use, understory vegetation in the campsite killed, well worn path to water, tree roots exposed, and some erosion present. Tree limbs broken-off, a general lack of firewood.

Only 28 campsites passed the spacing criteria test of the original 65 campsites. In Table 19 the results of applying the spacing criteria to all campsites inventoried are summarized to show the number of campsites, people, and campsite use classes, by lakes.

Considerable subjectivity entered into this screening process, with no opportunity for field verification of questionable decisions. However, the screening was reviewed for accuracy by the District Wilderness Supervisor.

Table 19. Lakes by campsite characteristics after applying the spacing criteria, Convict Canyon Area, 1984.

Location	Campsites (number)	(%)	Maximum Capacity (people)	Intensity of Use L	M	H
Mildred Lake	4	14	45	2	1	1
Dorothy Lake	7	25	55	2	2	3
Wit-so-nah-pah Lake	2	7	19	1	1	0
Big Horn Lake	2	7	20	2	0	0
Constance Lake	1	4	4	1	0	0
Bright-Dot Lake	2	7	12	2	0	0
Cloverleaf Lake	3	11	30	1	2	0
Edith Lake	3	11	39	1	1	1
Genevieve Lake	4	14	51	1	1	2
Totals	28	100	275	13	8	7

Again, Dorothy Lake produced the greatest number of campsites (25 percent), followed by Mildred Lake and Genevieve Lake (both 14 percent).

2. Management Plan Capacity Estimation

The John Muir Wilderness Management Plan outlines how entry quotas are to be developed for this wilderness. The trailhead is the source of control and basis for the quota.

An entry quota level of 22 people per day resulted from using 28 campsites (the number resulting after applying the screeening criteria to the total campsites inventoried, refer to Table 19). An average party size

of 2.7 people and a 3.5 day length of stay were used to compute this quota level. (Refer to Tables 5 and 6 for party size and length of stay estimates.) This entry quota considered both overnight hikers and outfitter guided users.

V. SUMMARY AND CONCLUSIONS

The broad objective of this study was to examine several aspects of the recreational use and associated impacts and management within the Convict Canyon Area. The development of a capacity for protecting the wilderness resource and recreational experiences of visitors was the focus of this analysis.

Recreational use and resource data were obtained from visitor permits, user response letters asking for comments, and a campsite inventory. The visitor permit, required upon entry, provided basic use and party profile information. A sample of 89 Convict Canyon Area users provided a source of judgement about existing use, impacts, crowding and management issues. The campsite inventory data were used to identify an important aspect of the physical capacity, the amount and capabilities of campsites in the study area.

A. Use Characteristics

The vast majority of users (93 percent) entered the Convict Canyon Area from the Convict Lake Trailhead; Laurel Trailhead was used by the few parties not entering through the Convict Trailhead. Visitor-day use (12 hours/visitor day) was estimated to be 2,631 during the 1984 season. The split between the number of day and overnight users was 710 and 573, respectively. However, overnight users accounted for 86 percent of the visitor-day usage. Commercially guided stock parties represented only 7 percent of the total visits to the area.

Residency of Convict Canyon Area visitors was found to be mostly local (17 percent) or Southern California (61 percent).

The average size of parties entering the Convict Canyon Area was 2.3 people. Backpacker parties averaged one-half the

size of outfitter guided parties (2.5 and 5.1, respectively). Day user parties were the smallest (2.1 people/party).

The average visitors spent 3.5 nights in the wilderness per trip. Outfitter guided stock visitors stayed on the average about twice the number of nights that backpackers did.

Interestingly, day visitors to the Convict Canyon Area spread their use quite evenly between May and September. Between 50 - 75 parties of day users entered the area each month. For this reason, day visitors probably should not be considered a major concern in a capacity determination. And, they rarely penetrate far enough into the wilderness to be a serious impact on overnight visitors.

The relatively even flow of day use visitors over the season was not duplicated by the overnight user group. Overnight parties visited the study area very lightly during the months of May, June, and even July. However, overnight use during August and the first part of September sharply increased. The Labor Day weekend averaged 28 overnight parties (84 people) each day with a peak of 34 overnight parties and 103 people on the 1st day of September.

Party encounters on 12 selected days during the use season showed a wide variation between camped and travelling parties. In general, camped parties could expect less than half the number encounters with other parties compared to travelling parties. Averaging camped and travelling parties, when ten or fewer parties (both overnight and day use) were in the Convict Canyon Area, the average number of other parties encountered was about three. Camped parties averaged 1.3 while travelling parties averaged 3.9 other party encounters per day.

The average number of encounters estimated for each party when the total number of parties in the wilderness was between 11 and 20, was 2.8 for camped parties and 7.6 for

tr parties. On September 1, 1984 the average camped pably encountered more than 7 other parties that dathe average travelling party encountered twice tht. The many days during August and the first week ofer that exceeded 10 parties per day, with expected paunters exceeding 4 - 5 per day, certainly did not medesired level of party encounters cited by wi users of previous studies.

B. Usonses

A from the District Ranger, requesting reactions to vse, capacity and management topics, was mailed to 2(Convict Canyon Area users. Eighty-nine users rd. A response form accompanying each letter helped tze respondent's comments.

Aately 70 percent of Convict Canyon Area respondents r that "many opportunities" existed to find solitude. Al percent said the opportunities were there except fareas between Convict Lake and Mildred Lake, and at Mand Dorothy Lakes. Thirteen percent felt that it wficult or impossible" to find solitude. Almost all o dissatisfied used the area during a heavily used t

Ee of overuse was identified by 68 percent of the rents. Forty-one percent indicated the impact was diing to them while the remaining 27 percent merely nche problem.

Hf the respondents stated that they did not have crd conditions during their trip. About one of every threspondents felt they encountered "crowded" coions. The remainder said something to the effect that thnditions were "not bad".

For those encountering other parties, respondents generally (68 percent) reported a positive reaction to the "behavior of others". About 24 percent identified problems with others centered around litter, large groups, water pollution, hunting and horses.

Roughly one out of every five respondents strongly felt that "convenience facilities" were not needed or desired. They considered improvements to be inappropriate in wilderness and said improvements would only encourage more people to use the area. Similarly, another one of every five said the present facilities were sufficient. On the other hand, one of every two respondents mentioned a needed facility, usually a sign, bridge, or trail.

Most respondents supported either the present management (29 percent) or specifically stressed the need for further regulations (38 percent) to protect the wilderness experience and resource. The need for controlling heavy use and campfire restrictions because of the lack of fuelwood was mentioned often. Sixteen percent rejected the idea that management measures were warranted. Other specific comments were made about the need to control stock use and firearms. Two respondents suggested using "passive" management techniques such as "no bridges", to control use.

Two-thirds of the users responding to the District Ranger's letter reported engaging in activities such as, hiking, viewing scenery and photography that were termed as "appreciative-symbolic". The next largest activity category, "extractive-symbolic", accounted for 18 percent of all respondents reasons for their trip. Examples were fishing and hunting.

Better than nine out of every ten Convict Canyon Area respondents reported great success with "achievement of their trip expectations" and "overall enjoyment". The only disappointments came during peak use days as a result of crowding.

C. Campsite Characteristics

Estimation of the physical overnight camping capacity and desired campsite spacing of the Convict Canyon Area occupied the third part of this study.

Sixty-five campsites were inventoried within the study area. Campsites judged to be in the light use category amounted to 33. Twenty campsites were moderately used and 12 appeared to be heavily used. Dorothy Lake accounted for the greatest number of campsites (29 percent) and the most intensively used campsites (73 percent).

Of the 65 campsites, only 28 passed the spacing criteria test. Again, Dorothy Lake had the greatest number of campsites (25 percent), followed by Mildred Lake and Genevieve Lake (both 14 percent).

D. Management Plan Capacity Estimation

The John Muir Wilderness Management Plan's entry quota formula produced a daily trailhead quota of 22 people. This entry quota applied to both overnight hikers and outfitter guided users.

VI. RECOMMENDATIONS

A. Carrying Capacity

One principal study objective was to define the amount of "high-quality" wilderness use the Convict Canyon Area is capable of sustaining without causing unacceptable resource damage to the wilderness environment. Even though a capacity is suggested here, one should keep in mind that carrying capacity is not considered to be a single, fixed value. A range of alternatives could be proposed.

A capacity of 65 people-at-one-time (PAOT) is recommended for the Convict Canyon Area. This capacity includes all users (day hikers and riders, overnight backpackers, and commercial stock users). This recommended capacity was developed from the following considerations:

(1) A "high-quality" wilderness experience should involve few encounters with other groups, as studies of wilderness visitors have generally reported a sharp decline in their satisfaction level after only 3-4 encounters per day. However, this concern must be tempered by further findings suggesting a great disparity between what a visitor says they prefer and what they actually tolerate while still enjoying a quality experience (Badger, 1975). Presumably, visitors' level of satisfaction does not drop off as quickly as they reported. Hence, the mean maximum encounter level should not exceed eight per day, which allows maximum averages of 3-4 per day for camped parties and 8-9 for travelling parties (refer to Table 8 and Figure 5).

Sixty-five people represent 26 parties, of a 2.5 party size average (Table 5). At this capacity, the maximum allowable encounter level would likely be realized (Figure 5).

(2) Many respondents to the inquiry perceived "crowded" conditions during peak use periods (Tables 9, 11, 12 and 17). While it was not possible to identify a "breaking-point" for this indication of declining satisfaction, users rarely reported feeling crowded until the total number of visitors exceeded between 55 to 75. The perceived crowding at the 65 PAOT capacity is probably minor.

(3) Complete campsite solitude is critical for a "high-quality" wilderness experience. Twenty-eight campsites in the study area met this criterion. Based upon 100 percent occupancy of these 28 campsites, a capacity of 70 PAOT results (using the study mean party size). This capacity estimation warrants scaling-down because of the even party distribution assumption and potential variation in the number of parties using the area at a given time.

B. Capacity Allocation

Allocating the capacity between the various kinds of users is necessary for effective management.

In order to fairly allocate a portion of the capacity to the commercial outfitter, it is necessary to review the historical use of the pack station. During the early 1970's, the outfitter accounted for approximately 25 percent of the August (peak) use. In 1984, this figure was only seven percent. While the stock use has drastically declined, the backpacker use has increased over the years. Nonetheless, the interest to redevelop the outfitting/guiding business is expected to rebound following the installation of a bridge over Convict Creek. Considering the past and present use, it is recommended that the commercial capacity be limited to 23 percent of the total. Hence, the commercial PAOT capacity would be 15, including both day and overnight

users. If the outfitter does not fully utilize this allocation, the excess should be made available to the general public.

Distribution of the remaining 50 PAOT capacity should be made according to present use intensities. The maximum number of day hiker parties during August of 1984 was five (Table 24), or ten people (2.1 people/party). However, since many day hikers do not stay long or penetrate far into the wilderness, a PAOT capacity of 5 is recommended. Hence, the resulting overnight backpacker capacity would be 45 PAOT, or an average of 15 people per day.

C. Current Use Level

For most of the summer season, use in Convict Canyon is well below the recommended capacity and does not warrant taking any action to reduce it. Opportunities for finding solitude are excellent. Between mid-August and Labor Day, however, consideration should be given to managing use within the capacity. When capacity is exceeded for more than seven days during a season, it is recommended that steps be taken to manage at or below capacity.

Because day use (not including commercial) appears to be limited by environmental factors during the high use period, it is probably not important to directly control the use at this time.

The effects of replacing the Convict Creek bridge should be carefully monitored. This single act has the potential of not only increasing the use season and total use but intensifying use on peak days and accelerating resource degradation.

D. Capacity Management Techniques

Techniques for managing wilderness use are of two main types, indirect and direct. Indirect techniques, which tend to influence or modify behavior, should generally be exhausted before employing the more heavy-handed, direct approaches, such as entry quotas.

(1) Consideration should be given to using any appropriate "alternations" to manage use levels below the established capacity. Here, opportunities exist to alter trails, roads, fish stocking and a bridge.

(a) Altering the Convict Lake road or trailhead would not be practical since these improvements are associated with a significant recreation complex. The Laurel Canyon road, however, would be feasible to alter and indirectly change the level and distribution pattern of use to the study area. The road could be totally closed to discourage use or upgraded to encourage more use through the Laurel Trailhead. Since the present low-grade road makes it difficult for visitors to access the area by way of Laurel Trail, few actually do. The few willing to attempt it are rewarded with a high quality wilderness experience. It is recommended that the road remains unaltered.

(b) An alternative involving the Laurel access which would improve use distribution slightly without increasing overall use would be to reassign the outfitting/guiding capacity from Convict Lake Resort to the Mammoth Equestrian Center. This arrangement has been practiced over the past two years. The intent would be to put all stock use over the Laurel Trail, thereby reducing the total number of encounters between parties,

particularly, between hikers and riders. At capacity, the quality of the experience would be improved for the average visitor, with the experience of few backpacker visitors entering through the Laurel trail somewhat degraded by the increased horse encounters. Because of the overall benefit of separating hikers from stock parties, this action is recommended.

(c) Limited opportunity exists to develop additional trails, or connect an adjacent drainage with the Convict Canyon Area. Since most of the usable area is already accessed by trails, and considering the need for some trailless areas for cross-country travel, new trails should not be constructed within the study area. Trails should be maintained to their present assigned standards, with the possible exception of the primary Convict Canyon Trail. If stock use is limited to the Laurel Trail, down-grading the level of maintenance on the Convict Canyon Trail should be considered. In the absence of intensive stock use, justification for the higher level of maintenance is lost. The high cost of maintenance for this trail section (due to steep, rocky slopes, and active geology) should also be considered.

(d) Altering the present fish stocking program could affect use within the study area. Few respondents offered fishing as the primary or only reason for visiting the area. However, many insinuated that the activity was an important part of their overall experience. Apparently, the effort required to get to fishing locations within the study area outweigh the fishing benefits. Probably little could be realized by altering the fish stocking program, and therefore, it is not recommended.

(e) Possibly the most powerful alteration option available within the study area is the Convict Creek bridge. Replacing this bridge could drastically increase the total use, including lengthening the use season and use on peak days. Since the replacement contract has already been awarded it would not be feasible to stop the project. However, if the bridge ever fails, it is recommended that it not be repaired or replaced.

(2) Efforts to redistribute use through information supplied to visitors has been met with varying success (Lucas, 1981). Because of the area's physical character and management objective, to offer outstanding opportunities for solitude, redistributing use within the area is not considered desirable or necessary. On the other hand, redistributing use during peak use periods to other areas where it would be compatible with that area's management objectives should be explored.

(3) The need for better communicating with wilderness visitors to effectively educate them about the wilderness environment and persuade them to minimize their impacts is widely recognized by resource managers (Fazio, 1979). A comprehensive communications analysis for users to this area should be developed to target educational efforts based upon specific needs and management objectives. The following list of recommended communication opportunities is far from complete, offering only a starting point.

(a) An interpretive display focusing on management problems in the area should be located at the Convict Trailhead.

(b) Whereas much of the day use within the Convict Canyon Area originates from campers camped at Convict Lake Campground, a weekly campfire program, presented by the area wilderness ranger, is suggested. This program should emphasize the concept of wilderness, user ethics, and specific management problems.

(c) The administrative cabin at Convict Lake offers an excellent opportunity for making personal contacts with wilderness visitors prior to entry. Visitor permits could be offered at this location, thereby necessitating the contact. A simple sign at the trailhead could be used to direct visitors wanting information to the field station.

(d) Mailed inquiries from potential visitors should be seen as an opportunity for furthering management objectives by providing specific responses aimed at explaining management problems and offering pertinent information about the area.

(e) Specific efforts should be made to communicate with the local outfitter and his guides, particularly stressing stock use ethics. If possible, an employee with stock handling background should make these contacts.

(4) Due to the potential effects of replacing the bridge, it is essential that photo-plots be made of a sample of campsites to monitor impact trends. This information should be considered when evaluating the effects of past use levels and management practices.

(5) If use continues to exceed capacity after implementing all practical indirect management techniques, it may be necessary to ration use and/or impose restrictions on activities.

(a) Due to the severe lack of wood around numerous lakes, the need to restrict campfires should be analyzed immediately. Appropriate actions to reduce further damage to the remaining vegetation should be implemented.

(b) It is strongly recommended that the maximum group size be limited to 15. The chances of large groups locating the few campsites capable of accommodating them is remote. The consequences of large groups using small campsites are potentially disasterous to the resource.

(c) If use continues to exceed the capacity, ration use into the area according to the recommended allocation plan (Section VI B). In the interest of standardization, employ the basic Inyo capacity management procedures for this area (refer to DeGraff, 1982). Apply the visitor capacity to the two trailheads based upon present use intensities (with the exception of the outfitter's allocated capacity, if transferred to the Laurel Trailhead).

The next step is the responsibility of the Forest Supervisor, to decide whether or not to implement all, or portions, of the preceeding recommendations. Actions approved by the Forest Supervisor will then be implemented by the District Ranger.

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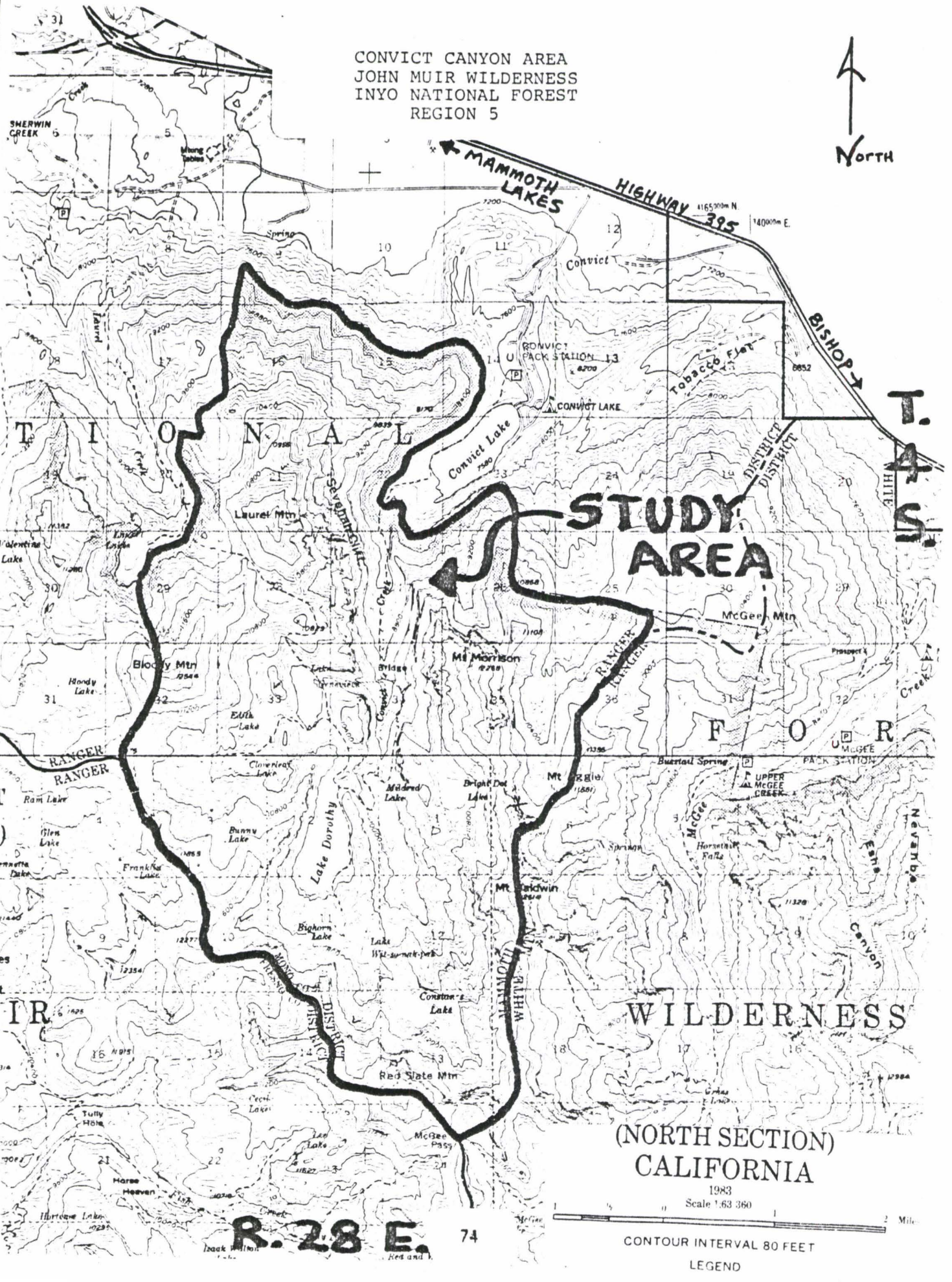
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G

H


CONVICT CANYON AREA
JOHN MUIR WILDERNESS
INYO NATIONAL FOREST
REGION 5
North
MAMMOTH LAKES
HIGHWAY 395
BISHOP
STUDY AREA
T. 4 S.
R. 28 E.
WILDERNESS
(NORTH SECTION)
CALIFORNIA
1983
Scale 1:63 360
CONTOUR INTERVAL 80 FEET
LEGEND
Convict Lake
CONVICT PACK STATION
CONVICT LAKE
Laurel Mtn
Mt Morrison
McGee Mtn
Bloody Mtn
Red Slate Mtn
Mt Baldwin
Lake Dorothy
Bighorn Lake
Constance Lake
McGee Pass
Tobacco Flat
Buttrail Spring
UPPER McGEE CREEK
PACK STATION
Horseshoe Falls
Nevahbe
Canyon
Sherwin Creek
Ram Lake
Glen Lake
Frankie Lake
Bunny Lake
Cloverleaf Lake
Mildred Lake
Bright Dot Lake
Ruby Lake
Heidi Lake
Cecil Lake
Tully Hole
Horse Heaven
Hurricane Lake
Handy Lake
Ediza Lake
Garnet Lake
Lake Virginia
Lake Ann
Mono Creek
Convict Creek
Rock Creek
Sevenmile Creek
Ranger District
White Mountain
Inyo National Forest
74

APPENDIX B

HISTORICAL USE OF CONVICT PACK STATION FROM 1968 - 1975

The packing season usually starts in Convict Canyon area around June 15, depending on the previous winter snow load in the mountains. During June, pack trips traveled into the wilderness about every three days. The pack station would take in about 20 visitors during June which would stay an average of 5 days (4 nights) or account for 180 RVD's total use.

July would show an increase of 25%, with parties going in on an average of every other day. A total of 45 people, average stay of 5 days would equal 405 RVD's total use.

August was always the highest use month with trips going in or coming out every day. I would estimate 120 visitors or 1080 RVD's of use, occurred each August.

In September, business dropped off after Labor Day weekend with trips about every 4 days. Thirty-five people in September represented about 315 RVD's of use.

Also during the season, day rides and half day rides would enter the wilderness; an average of 3 people every other day. The trip would last 4 to 6 hours, or .5 RVD. For a period of 3 months (or 90 days) a total of 135 people would participate in day rides, representing 68 RVD's.

An estimated total use for the season would be:

Visitors	Number	RVD's
Day	135	68
Overnight	220	1980
Total	355	2048

These figures represent an overall average for the period between 1968-75 when I operated the pack station for the Convict Lake Resort.

During the summer of 1976 Bob Wenger sold the stock and closed down the station. The following summer he rented stock from Dennis Winchester in Lone Pine. The stock was primarily for four hour rides. He continued this operation until he sold the resort.

The new owners lease the pack station to Lou Roeser, owner of Mammoth Lakes Pack Outfit. The previous winter destroyed the bridge located at a major stream crossing in Convict Canyon, closing off access to the wilderness.

In the last two years a few parties have traveled horseback over the Laurel Canyon Trail. I estimate guided pack use was 25% in 1977-84 of what it had been between 1968-75 in Convict Canyon.

Mike Morse

MIKE MORSE
Wilderness Supervisor

APPENDIX C

Summary of specific objectives of the John Muir Wilderness Management Plan pertaining to Convict Canyon Use Study.

- Implement specific regulations at heavily used lakes and meadows only if limiting use does not, or will not, alleviate resource damage due to concentration.

- Include present level of commercial stock use as part of the quota when establishing trailhead limits.

- Direct use limits to dispersing public and commercial backpacker use, since this use has drastically increased.

- Manage the wilderness to maximize visitor freedom-of-movement thru exterior controls and contacts prior to the visitor entering the Wilderness.

- Determine capacity limits for all travel zones of the John Muir Wilderness, utilizing the Bishop Creek Study method.

- Implement additional entry limit controls when capacity limits are exceeded.

- Prohibit wood fires in specific areas if limiting use does not alleviate the wood shortage problem.

- Appropriately continue the aerial stocking program in the Wilderness. Stock only lakes that were historically stocked prior to the Wilderness Act of 1964.

- Limit use of any area if water pollution from human sources exceeds the following:
  - 9.2 - total coliform count per milliliter
  - 0 - fecal coliform count per milliliter
  - 0 - fecal strep count per milliliter

- Maintain trails to meet their assigned maintenance levels.

- Maintain directional signs at trail junctions.

- Permit regulation and warning signs within Wilderness at areas where specific regulations apply but consider the need for any sign.

- Promote research projects that aid management by providing information on critical resources such as water quality, human sanitation, use patterns, user characteristics, and endangered or threatened wildlife species.

APPENDIX D

VISITOR'S PERMIT

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

FORM APPROVED
OMB NO. 40R3867

VISITOR'S PERMIT

(Ref. FSM 2323)

WHEN SIGNED, THIS SINGLE - VISIT PERMIT AUTHORIZES

(1) NAME (Last, Middle Initial, and Last)
Sterling Trenbarth

(2) MAILING ADDRESS (Optional)
3043 Hollywell Place

(3) CITY AND STATE
Glendale CA

(4) ZIP CODE
91206

(5) TO VISIT (and be found campsites in accordance with regulations)
0087

(6) DATES (Give best estimate of start and finish dates)
From month/day: 0726
Through month/day: 0829

(7) LOCATION OF ENTRY POINT
005

(8) LOCATION OF EXIT POINT
005

(9) PRIMARY METHOD OF TRAVEL
02

(10) NUMBER OF PEOPLE IN GROUP
05

(11) NUMBER OF PACK AND SADDLE STOCK
09

(12) NUMBER OF WATERCRAFT OR VEHICLES
(Check Regulations - Vehicles not allowed in many permit areas)
00

I agree to abide by all laws, rules and regulations which apply to this area and will do my best to see that everyone in our group does likewise.

(13) VISITOR'S SIGNATURE
Sterling Trenbarth

DATE
7/26

(14) TRAVEL PLAN

List or code all zones to be traversed, in sequence of travel, and number of nights to be spent in each zone.

In areas where specific campsites are assigned, list and code each site and the number of nights assigned.

TRAVEL ZONES (or campsite)	NIGHTS
Laurel Pass	0050
Edith Lake	0053

OPTIONAL

(15)(a) NUMBER OF TIMES YOU VISITED THIS AREA IN PAST 10 YEARS (Enter appropriate code)
[1] NONE [2] ONCE [3] TWICE [4] THREE [5] FOUR [6] FIVE OR MORE

(15)(b) IS VISITING THIS AREA (Enter appropriate code)
[1] THE PRIMARY PURPOSE OF YOUR TRIP AWAY FROM HOME?
[2] ONE OF SEVERAL IMPORTANT THINGS YOU PLANNED TO DO ON YOUR TRIP?
[3] SOMETHING YOU DECIDED TO DO AFTER ARRIVING NEAR THE AREA?

(16) REMARKS

(17) ISSUING OFFICER'S SIGNATURE
Laurie Fitzpatrick

FOREST CODE: 04
OFFICE CODE: 52

VISITORS MUST HAVE THIS PERMIT IN POSSESSION DURING STAY IN REQUIRED PERMIT AREAS

FS-2300-30 (7/79)

United States Department of Agriculture
Forest Service
Inyo National Forest
Mammoth Ranger District
Mammoth Lakes, CA 93546

Reply to: 2320

Date:

APPENDIX E

LETTER AND RESPONSE FORM

Dear Wilderness Visitor:

Your name and address was obtained from information you gave upon securing a wilderness permit last summer. The reason for this letter is to ask you for assistance.

To ensure the continued preservation of the wilderness environment and the most enjoyable experience for our visitors, we are reviewing the use of the Convict Canyon area within the John Muir Wilderness (see the attached map). Your experience using Convict Canyon has undoubtedly given you some information that would be of great help to us. We invite your comments to assist us with our work.

With respect to the Convict Canyon area, we are particularly interested in your observations of and/or reactions to such things as: opportunities for finding solitude, evidence of overuse, crowded conditions, achievement of your trip expectations, behavior of others, need for facilities (signs, trails, bridges, etc.), and need to manage use (travel permits, use limits, camping restrictions, etc.).

Information about yourself and group, such as previous wilderness experience, is of interest to us. Also, reasons why you chose to visit this area, and your overall enjoyment of it, would be very helpful.

Your response is needed by November 30, 1984 so that it can be used to help complete our work. Response forms are available for your use to record and submit comments. Please return your comments according to the directions on the response form.

Thank you for your interest and cooperation.

Sincerely,

DEAN J. MCALISTER
District Ranger
Mammoth Ranger District

CONVICT CANYON USER
RESPONSE FORM

If you wish to use this form to record and mail your input, you might find the suggested headings identified below helpful for organizing your comments.

To mail your comments, simply fold this form, exposing the self-addressed and postage paid back cover, and drop it in the mail. Be sure to secure the fold with a staple. Thank you.

Comments:

Opportunities for finding solitude _____

_____

_____

Evidence of overuse _____

_____

_____

Crowded conditions _____

_____

_____

Achievement of your trip expectations _____

_____

_____

Behavior of others _____

_____

_____

Need for facilities (signs, trails, bridges, etc.) _____

_____

_____

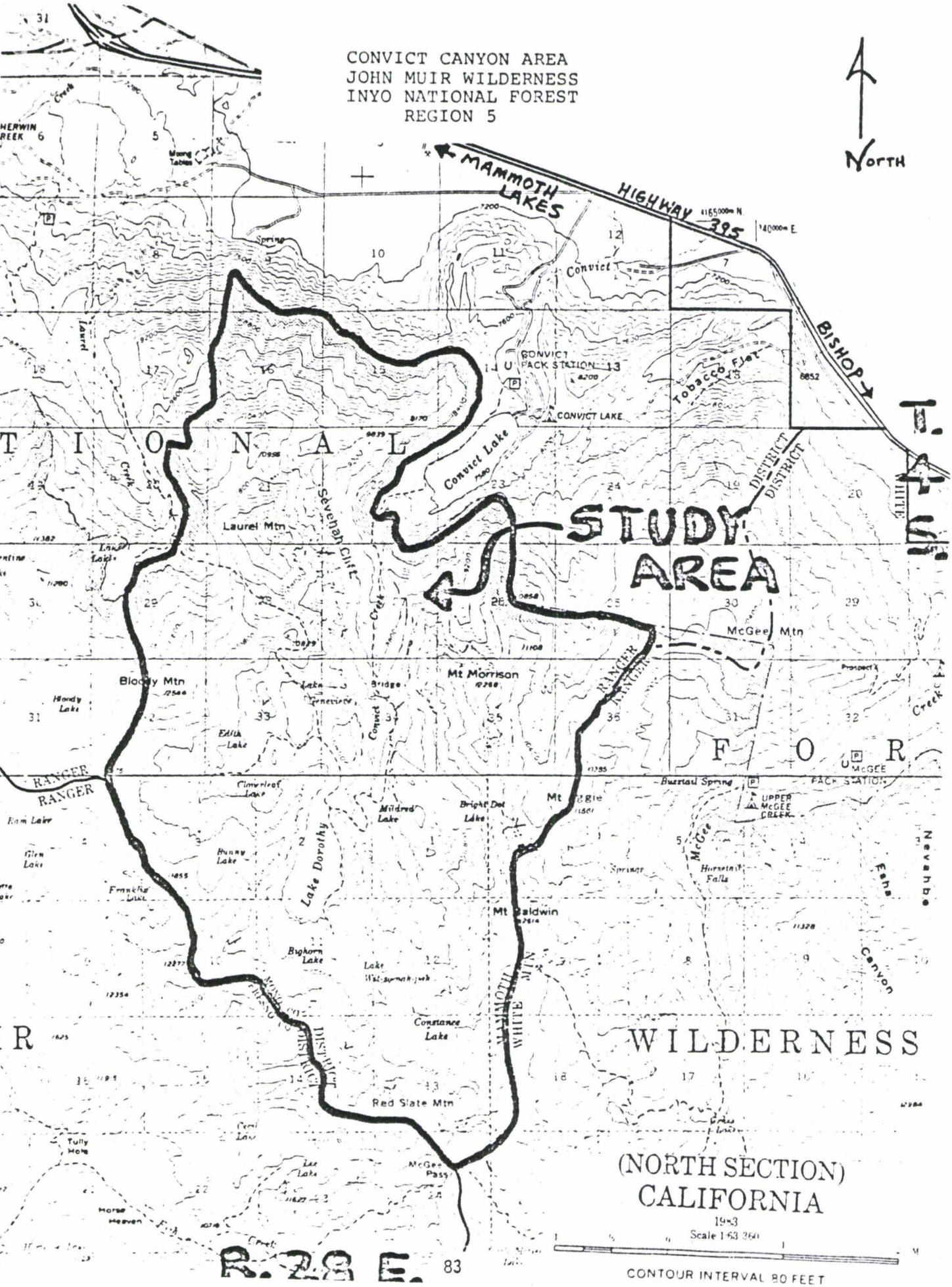
Need for management policies to manage use (visitor permits, use limits, camping restrictions, etc.) _____

Your experience with wilderness _____

Reasons for visiting Convict Canyon _____

Overall enjoyment _____

Other _____


CONVICT CANYON AREA
JOHN MUIR WILDERNESS
INYO NATIONAL FOREST
REGION 5
North
MAMMOTH LAKES
HIGHWAY 395
BISHOP
CONVICT PACK STATION
CONVICT LAKE
Convict Lake
Tobacco Flat
STUDY AREA
Laurel Mtn
Sevenah Cliff
McGee Mtn
Bloody Mtn
Mt Morrison
RANGER DISTRICT
McGEE PACK STATION
UPPER McGEE CREEK
Mt Baldwin
Red Slate Mtn
Lake Dorothy
Constance Lake
WILDERNESS
(NORTH SECTION)
CALIFORNIA
1953
Scale 1:63 360
CONTOUR INTERVAL 80 FEET
R.28 E.
83

APPENDIX F

Encounter Estimation Procedure

The party, as described by visitor permit information, was the basis for estimating encounters. Only encounters for overnight parties were calculated; however, day use parties using the area were included in encounter estimations for the overnight parties.

Twelve days were selected for estimating encounters. Sample days were selected to represent the range in numbers of day use and overnight parties using the area. For each sample day, all overnight party locations and travelling or camping status were plotted. Most parties gave itinaries when obtaining their visitor permits. Parties failing to identify their itineraries were assigned destinations and camping locations according to a campsite use factor (Table 20). Campsite use factors were calculated from the campsite inventory data generated in Chapter VI, C1. Each lake showed campsites according to their intensity of use (light, moderate, or heavy). The weight system used was: 1= 0-29 days use/season (light use); 2= 30-59 days use/season (moderate use); and 3= 60 or more days use/season (heavy use). A simple weight, multiplied times the number of campsites in each use category, and then added together, provided a use intensity factor for each lake. Finally, intensity factors were converted into a total percentage. The results are displayed in Table 20.

Table 20 Lakes by estimated party use, Convict Canyon Area, 1984.

Lakes	Campsites Use Intensity L	M	H	Weighted Use Factor[1]	Percentage Use
Mildred	5	3	1	14	13
Dorothy	7	4	8	39	35
Wit-so-nah-pah	4	1	0	6	5
Big Horn	2	0	0	2	2
Constance	1	0	0	1	1
Bright Dot	3	1	0	5	5
Cloverleaf	4	6	0	16	15
Edith	3	2	2	13	12
Genevieve	4	3	1	13	12

[1] Calculated by multiplying campsites shown under L, M, and H by a weight of 1,2,and 3, respectively, then added by row.

Once party locations and travel status were determined, encounters were calculated, one party at a time, using the following assumptions and guidelines:

Assumptions

(1) Day use parties using the Convict Trailhead travelled as far as the following locations by given percentages:

Convict Creek Bridge	15%
Mildred Lake	50%
Dorothy Lake	35%

(2) Day use parties using the Laurel Trailhead travelled as far as the following locations by given percentages:

Genevieve Lake	50%
Dorothy Lake	35%
Edith Lake	15%

(3) Overnight parties, on travelling days, started travelling no later than noon and would not be camped before 3 p.m.

(4) Camped parties spent half of their wake hours around their camp and the other half day hiking or wandering around the lake or surrounding area.

Encounter Assumptions

(1) Parties travelling on the same trail in opposite directions will encounter each other except that day use parties will be encountered only half of the time. A day use party will often reach its destination and return before an exiting party arrives. Or, the day use party might be fishing along Convict Creek or at Lake Mildred when the exiting party passes.

(2) Parties camped will naturally disperse themselves around a lake to reduce encounters with other parties. Encounters happen to camped parties when: other parties must camp within 1/4 mile; travelling parties pass camped parties (one out of every three passing parties will have an encounter with the camped party); and, other camped parties or individuals of parties aimlessly wander around the area and walk into the camp.

(3) Parties travelling the same direction encounter each other one time out of every three opportunities. These encounters include parties starting off at the same time and parties catching each other because one decides to stop along the trail for some reason or because the parties just travel at different speeds.

APPENDIX G

People and Parties Present Each Day

Table 21. Number of people and parties present each day in May, Convict Canyon Area, 1984.

May (Date)	Day User		Camper		Total	
	People	Parties	People	Parties	People	Parties
1	-	-	-	-	-	-
2	2	1	-	-	2	1
3	-	-	-	-	-	-
*4	4	3	-	-	4	3
*5	2	1	2	1	4	2
*6	-	-	2	1	2	1
7	-	-	2	1	2	1
8	-	-	2	1	2	1
9	2	2	2	1	4	3
10	-	-	2	1	2	1
*11	-	-	2	1	2	1
*12	-	-	2	1	2	1
*13	-	-	2	1	2	1
14	3	2	-	-	3	2
15	-	-	-	-	-	-
16	2	1	3	1	5	2
17	-	-	8	2	8	2
*18	1	1	8	2	9	3
*19	8	3	8	2	16	5
*20	-	-	3	1	3	1
21	3	2	-	-	3	2
22	1	1	-	-	1	1
23	4	2	-	-	4	2
24	6	5	-	-	6	5
*25	2	1	2	1	4	2
*26	11	6	5	2	16	8
*27	19	7	7	3	26	10
*28	6	3	9	4	15	7
29	5	3	6	3	11	6
30	-	-	2	1	2	1
31	-	-	2	1	2	1

* Represents weekend days (Friday, Saturday, or Sunday) or holidays.

Table 22. Number of people and parties present each day in June, Convict Canyon Area, 1984.

June (Date)	Day User		Camper		Total	
	People	Parties	People	Parties	People	Parties
*1	-	-	2	1	2	1
*2	9	4	2	1	11	6
*3	-	-	3	2	3	2
4	-	-	3	2	3	2
5	2	1	2	1	4	2
6	1	1	2	1	3	1
7	-	-	2	1	2	1
*8	2	1	7	2	9	3
*9	5	2	7	2	12	4
*10	5	2	6	1	11	3
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
*15	7	3	-	-	7	3
*16	3	2	7	3	10	4
*17	5	2	7	3	12	5
18	9	4	5	2	14	6
19	-	-	2	1	2	1
20	5	3	2	1	7	4
21	-	-	2	1	2	1
*22	12	6	2	1	14	7
*23	3	1	18	2	21	3
*24	2	1	16	1	18	2
25	-	-	3	1	3	1
26	3	1	5	2	8	3
27	2	1	5	2	7	3
28	-	-	5	2	5	2
*29	-	-	2	1	2	1
*30	-	-	2	1	2	1

* Represents weekend days (Friday, Saturday, or Sunday), or holidays.

Table 23. Number of people and parties present each day in July, Convict Canyon Area, 1984.

July (Date)	Day User		Camper		Total	
	People	Parties	People	Parties	People	Parties
*1	8	3	4	2	12	5
2	-	-	4	2	4	2
3	-	-	2	1	2	1
*4	-	-	9	2	9	2
5	-	-	11	3	11	3
*6	5	1	13	4	18	5
*7	-	-	15	4	15	4
*8	-	-	6	2	6	2
9	-	-	4	1	4	1
10	-	-	4	1	4	1
11	1	1	2	1	2	1
12	8	3	6	3	14	6
*13	-	-	13	7	13	7
*14	2	1	9	6	11	7
*15	14	4	8	6	22	10
16	2	1	4	3	6	4
17	-	-	5	3	5	3
18	2	2	7	4	9	6
19	3	1	7	4	10	5
*20	4	2	12	4	16	6
*21	18	6	16	5	34	11
*22	5	3	16	5	21	8
23	1	1	7	2	8	3
24	3	2	2	1	5	3
25	4	2	2	1	6	3
26	7	3	2	1	9	4
#27	2	1	7	3	9	4
*28	-	-	7	3	7	3
30	3	1	4	2	7	3
31	-	-	4	2	4	2

* Represents weekends (Friday, Saturday, Sundays), or holidays.

Table 24. Number of people and parties present in August, Convict Canyon Area, 1984.

August (Date)	Day User		Camper		Total	
	People	Parties	People	Parties	People	Parties
1	2	1	2	1	4	2
2	-	-	4	1	4	1
*3	2	1	7	3	9	4
*4	10	4	10	4	20	8
*5	5	3	9	3	14	6
6	2	1	4	1	6	2
7	5	2	10	4	15	6
8	2	1	12	5	14	6
9	-	-	6	3	6	3
*10	10	3	7	4	17	7
*11	4	2	9	5	13	7
*12	6	3	10	6	16	9
13	6	5	6	6	12	11
14	16	5	27	8	43	13
15	7	3	33	10	40	13
16	4	2	38	11	42	13
*17	9	3	56	12	65	15
*18	5	2	55	12	60	14
*19	11	5	46	11	57	16
20	2	1	35	9	37	10
21	1	1	30	7	31	8
22	16	6	34	9	50	15
23	4	1	48	18	52	11
*24	5	3	53	15	58	18
*25	5	2	77	18	82	20
*26	9	3	77	20	86	23
27	2	1	76	18	78	19
28	2	1	76	17	78	18
29	-	-	68	16	68	16
30	-	-	60	13	60	13
*31	5	1	46	11	51	12

* Represents weekends (Friday, Saturday, or Sunday) or holidays.

Table 25. Number of people and parties present each day in September, Convict Canyon Area, 1984.

September	Day User		Camper		Total	
(Date)	People	Parties	People	Parties	People	Parties
*1	15	6	103	34	118	40
*2	14	6	80	29	94	35
*3	3	2	70	24	73	26
4	3	2	17	6	20	8
5	1	1	2	1	3	2
6	10	4	4	2	14	6
*7	1	1	10	5	11	6
*8	6	2	9	5	15	7
*9	4	2	6	4	10	6
10	1	1	6	4	7	5
11	2	1	3	2	5	3
12	-	-	1	1	1	1
13	-	-	-	-	-	-
*14	7	4	4	2	11	6
*15	5	2	12	4	17	6
*16	2	1	12	4	14	5
17	3	2	9	3	12	5
18	-	-	4	1	4	1
19	1	1	4	1	5	2
20	7	4	4	1	11	5
*21	6	4	16	5	22	9
*22	5	4	16	5	21	9
*23	6	3	12	4	18	7
24	2	1	3	1	5	2
25	2	1	-	-	2	1
26	4	3	1	1	5	4
27	-	-	2	1	2	1
*28	-	-	2	1	2	1
*29	-	-	6	3	6	3
*30	4	2	6	3	10	5

* Represents weekends (Friday, Saturday, or Sunday) or holiday.

APPENDIX H

RESPONSE LETTER

November 15, 1984
Rolling Hills, California

Dear Mr. McAlister:

Thank you for the opportunity to participate in your survey of Convict Canyon wilderness users. I have been visiting Convict Canyon regularly since 1978, my father since the early 1950's.

By way of background, I made my first backpacking trip in July, 1978, at the age of 19. The destination was Dorothy Lake. Since that time my interest in the outdoors has continued to grow; current activities include technical climbing, fly-fishing, ski-mountaineering, photography, and of course backpacking. I have spent three summers in the "unofficial" wilderness of southwest Alaska, made two long trips to the islands of the Sea of Cortez, and climbed throughout the Sierra Nevada and southern Rockies. My friends include both hard-core mountaineers and weekend backpackers.

Convict Canyon remains one of my favorite destinations for pure backpacking. The scenery, fishing, and light traffic make it an enjoyable place to take friends who get uneasy around ropes and ice axes. Because fires are still permitted, these people can get a taste of what they call "real camping" without traveling to distant mountain ranges.

In general I dislike the concept of regulated wilderness. Unfortunately, my experiences in Alaska made it clear just how destructive overuse has been to the backcountry of the Lower 48. In areas such as Convict Canyon I recognize the need for firm, perhaps even stringent measures to prevent overuse.

It is my opinion that the rugged topography of Convict Canyon offers several possibilities for "passive regulation." I was somewhat distressed when the new bridge went in below Mildred Lake; certainly it has increased the traffic at both Mildred and Dorothy. In your study you might consider how "non-development" might be used in conjunction with elevation, distance-from-trailhead, and selective trail decay to achieve management goals. I would discourage efforts to push campers into more remote areas with restrictions such as one-

night stay limits at Mildred and Dorothy. Perhaps by letting nature and altitude do much of the work, regulations and the expenditure of tax dollars can be kept to a minimum.

The following comments are organized under the headings from your Convict Canyon User Response Form, reply #2320, code #QH.

OPPORTUNITIES FOR FINDING SOLITUDE Compared to other equally accessible areas in the central and southern Sierra, Convict Canyon has numerous opportunities for finding solitude. For those willing to travel cross-country or in the off-season, such opportunities are abundant. During summer the lake basins obviously receive more pressure, but Constance, Wit-so-nah-pah, and Cloverleaf lakes are surprisingly uncrowded.

EVIDENCE OF OVERUSE There are definite signs of overuse at Mildred Lake (north shore campsites), Dorothy Lake (north end campsites near outlet), and Lake Genevieve (southwest corner campsites). Firewood is scarce at all of these locations. Trail erosion is a minor problem at the north end of Mildred, and on the slopes between Genevieve and Cloverleaf. Trash apparently left by packstrings (beer cans, bottles, discarded foam pads) is sometimes a problem at Edith, Genevieve, and Dorothy lakes.

CROWDED CONDITIONS The most crowded areas during summer are, in order, Mildred Lake, Dorothy Lake, and Genevieve Lake. These areas are actually quite crowded and unpleasant, so I make every effort to avoid them. There are always a number of day hikers wandering between Convict and Mildred lakes.

ACHIEVEMENT OF TRIP EXPECTATIONS My own expectations are somewhat different from those of my more casual companions; for them Convict Canyon is always enjoyable. In order of comment, the apparent highlights of their visits have been: 1) the scenery; 2) the solitude of remote campsites; and 3) the good fishing. Those who have visited other parts of the Sierra inevitably give Convict Canyon high marks. For me Convict Canyon is familiar, pleasant, and relaxing.

BEHAVIOR OF OTHERS Because my parties seek out secluded campsites, we have only limited contact with other visitors. Over the years I have observed scattered incidents of rock throwing, littering, the use

of soap in streams, excessively large fires, etc. In general visitors to the lower section of Convict Canyon seem less experienced than those who cross the crest. I think most troublesome behavior is due to inexperience, not the lack of ranger supervision,

NEED FOR FACILITIES Again, a very effective form of passive regulation is to keep facilities to a bare minimum. If it was up to me the bridge would be removed immediately. Signs are generally unnecessary. My feelings about trails are mixed; good trails encourage use, but bad trails encourage erosion. When faced with the destruction of vegetation due to erosion, I favor trail maintenance. The area between Genevieve and Cloverleaf lakes has several slopes where switchbacks may be advisable.

NEED FOR MANAGEMENT POLICIES TO MANAGE USE I support the mandatory use of visitor permits. The self-serve concept is fine as long as total use is within acceptable levels, but I believe Convict Canyon now requires some sort of trailhead quota during the peak use period. I am against length-of-stay restrictions for two reasons. First, they make the wilderness feel too much like a KOA campground. Second, they push people into more remote areas that are naturally preserved by their very isolation. Other restrictions such as no camping within 100 feet of water or trails are useful, necessary, and should be enforced.

MY EXPERIENCE WITH WILDERNESS Extensive wilderness experience: technical climbing, winter mountaineering, frequent visits to Sierra throughout the year, three summers in Alaska, etc. Since 1978 I have probably made 10-12 trips to Convict Canyon, with an average stay of 3-4 days.

REASONS FOR VISITING CONVICT CANYON Very simply, it's the most pleasant destination for 2-4-day trips with novice to intermediate backpackers I've ever found. All of the following are better-than-average for the Sierra: solitude, scenery, fishing, convenience, lack of restrictions.

OVERALL ENJOYMENT Very high, with no decrease over six years of regular visits. My companions also find Convict Canyon quite enjoyable.

In conlcusion, I offer the following list of possible actions your office could take to protect the fine qualities of Convict Canyon:

1. Trailhead Quota. From June 15-September 15, a quota of 15 overnight campers per day from both the Convict Lake and Laurel Canyon trailheads, including packstring campers. No quota for day hikers.

2. Block the Laurel Canyon road to vehicle traffic during peak use period.

3. Remove the bridge between Convict and Mildred lakes.

4. Prohibit campfires at Mildred, Dorothy, and perhaps Genevieve lakes.

5. Passive Regulatory Measures. The contrast between Cloverleaf Lake and Dorothy Lake is stunning. No regulations other than distance, elevation gain, and poor trail quality are in effect. These same measures, or slightly different ones, may be useful in other areas. Their advantage is low cost and the preservation of an "unregulated atmosphere."

Thank you again for the opportunity to express my views. Your desire to incorporate the opinions of wilderness users in this study is highly commendable. If I can be of further assistance to you in any way, please contact me. Convict Canyon and the rest of the Sierra is of great importance to both me and my friends.

Sincerely,

Doug Virtue
4 Maverick Lane
Rolling Hills, CA
90274
(213) 377-5413

APPENDIX I

Campsite Inventory Summary

WILDERNESS CAMPSITE INVENTORY

John Muir WILDERNESS, MAMMOTH RANGER DISTRICT DATE Summer '84

Site No.	Location	Zone No.	Size	Use	Maximum Capacity	Distance to Water	Wood Avail.	Veg. Type	Cover Density	Packer Use
1	Mildred Lake	0006	2	L	6	50	S	O	H	N
2	" "	"	10	L	12	600	S	LP	H	N
3	" "	"	2	M	4	100	S	LP	M	Y
4	" "	"	2	M	4	150	S	LP	M	Y
5	" "	"	30	H	25	200	S	LP	L	Y
6	" "	"	2	L	4	500	S	WP	M	N
7	" "	"	4	M	8	400	S	WP	M	Y
8	" "	"	4	L	10	200	S	O	L	N
9	" "	"	4	L	6	100	S		H	N

Name _____ Title _____

WILDERNESS CAMPSITE INVENTORY

John Muir WILDERNESS, MAMMOTH RANGER DISTRICT DATE Summer '84

Site No.	Location	Zone No.	Size	Use	Maximum Capacity	Distance to Water	Wood Avail.	Veg. Type	Cover Density	Packer Use
(10)	Dorothy Lake	006	2	L	8	100	H	LP	H	N
(11)	" "	"	2	M	8	150	A	LP	L	Y
12	" "	"	4	H	8	100	H	LP	L	Y
13	" "	"	4	M	10	200	H	LP	L	Y
14	" "	"	4	M	10	150	A	LP	L	Y
15	" "	"	4	H	10	100	H	LP	L	Y
(16)	" "	"	4	H	10	100	A	LP	L	Y
(17)	" "	"	2	H	6	100	A	LP	L	Y
18	" "	"	10	H	12	100	H	LP	M	Y
(19)	" "	"	1	H	4	100	A	LP	M	Y
20	" "	"	5	H	10	100	H	LP	L	Y
21	" "	"	1	L	4	100	H	LP	L	N
(22)	" "	"	2	L	4	100	A	LP	M	Y
23	" "	"	1	H	4	50	A	LP	L	N
24	" "	"	2	L	4	100	H	LP	L	N
25	" "	"	8	L	10	200	H	LP	L	N

Name _____ Title _____

WILDERNESS CAMPSITE INVENTORY

John Muir WILDERNESS, MAMMOTH RANGER DISTRICT DATE Summer '84

Site No.	Location	Zone No.	Size	Use	Maximum Capacity	Distance to Water	Wood Avail.	Veg. Type	Cover Density	Packer Use
26	Dorothy Lake	0006	10	M	15	200	A	LP	H	Y
27	" "	"	2	L	6	300	H	LP	H	Y
28	" "	"	6	L	10	500	A	LP	M	Y
29	Whitecrock pk	"	10	M	15	100	A	WB	L	Y
30	"	"	2	L	4	50	A	WB	M	N
31	"	"	1	L	4	100	A	WB	H	N
32	"	"	1	L	4	100	A	WB	M	N
33	"	"	2	L	4	200	A	WB	M	N
34	Big Herd Lake	"	10	L	20	150	A	LP	H	Y
35	" "	"	2	L	4	50	A	LP	M	N
36	Constance Lake	"	2	L	4	100	S	WB	H	N
37	Bright Dot Lake	"	2	M	6	0	S	WB	H	N
38	" " "	"	2	L	6	100	S	WB	H	N
39	" "	"	2	L	6	100	S	WB	H	N
40	" "	"	2	L	6	100	S	0	H	N

Name _____ Title _____

WILDERNESS CAMPSITE INVENTORY

John Muir WILDERNESS, MAMMOTH RANGER DISTRICT DATE Summer '81

Site No.	Location	Zone No.	Size	Use	Maximum Capacity	Distance to Water	Wood Avail.	Veg. Type	Cover Density	Packer Use
41	Cloverleaf lake	006	6	M	10	100	H	LP	H	Y
42	"	"	6	M	6	50	H	LP	L	N
43	"	"	2	M	6	100	H	LP	H	Y
44	"	"	2	L	6	100	H	LP	M	N
45	"	"	2	L	6	200	H	LP	H	N
46	"	"	2	M	6	100	H	LP	M	Y
47	"	"	2	L	4	100	H	LP	H	N
48	"	"	10	M	20	100	H	LP	H	Y
49	"	"	10	M	20	100	H	LP	M	Y
50	"	"	6	L	6	100	H	LP	H	N
51	Edith Lake	"	2	L	4	150	H	LP	H	N
52	"	"	2	L	8	50	H	LP	M	N
53	"	"	2	M	6	50	H	LP	L	Y
54	"	"	8	H	20	100	H	LP	L	Y
55	"	"	4	L	8	200	H	LP	L	Y
56	"	"	2	M	4	50	H	LP	M	N

Name _____ Title _____

WILDERNESS CAMPSITE INVENTORY

John Muir WILDERNESS, MAMMOTH RANGER DISTRICT DATE Summer '84

Site No.	Location	Zone No.	Size	Use	Maximum Capacity	Distance to Water	Wood Avail.	Veg. Type	Cover Density	Packer Use
57	Eddy Lake	006	10	H	15	100	A	LP	M	Y
58	Genevieve	006	20	~~H~~ H	~~4~~ 15	100	H	LP	L	Y
59	"	"	2	M	4	100	H	LP	L	Y
60	"	"	2	L	4	150	H	LP	L	N
61	"	"	1	L	2	50	H	LP	M	N
62	"	"	10	L	15	200	A	LP	M	N
63	"	"	2	M	6	100	H	LP	H	N
64	"	"	4	L	8	100	H	LP	H	N
65	"	"	10	M	15	100	H	LP	H	Y

Name _____ Title _____